

THE CHICAGO MEDICAL EXAMINER.

N. S. DAVIS, M.D., EDITOR.

VOL. V.

JUNE, 1864.

NO. 6.

Original Contributions.

ARTICLE XXIII.

REPORT OF COMMITTEE ON PRACTICAL MEDICINE.

By N. S. DAVIS, M.D., Prof. of Practical and Clinical Medicine.

Presented to the Illinois State Medical Society, May, 1864.

By the constitution, it is made the duty of the Committee on Practical Medicine to report at each Annual Meeting of the Society on such epidemic diseases as may have prevailed, and on such improvements in the department of Practical Medicine as may have been made in this State during the preceding year. In regard to such epidemics as have prevailed within the limits of this State during the past year, your Committee have not as full information as is desirable. Those chiefly worthy of attention are erysipelas and cerebro-spinal meningitis or Spotted Fever. In the city of Chicago, sporadic cases of erysipelas occurred rather more frequently than usual during all the summer of 1863. During the month of September, the cases became so much more numerous as to attract the attention of the profession; and from that time to the first of March the prevalence of the disease was such as to fully merit the title of epidemic. During the six months ending March 1st, 1864, twenty-one cases of this disease were admitted into the medical wards of the Mercy Hospital. In nearly all of these cases the disease commenced with rigors and all the ordinary symptoms

of continued fever, with some soreness of the fauces. In from one to three days, the erysipelatous inflammation made its appearance on the face—generally near the *alæ nasi*—though in a few cases it commenced at the lobe of the ear. It usually spread rapidly over the entire face and scalp, and, in a few cases, down the neck to the upper part of the trunk. In most of the cases there was much tumefaction of the face, extensive vesications, and, in three cases, suppuration in the cellular tissue of the eyelids. Nearly all of these patients come from the poorer classes of society in the city, and had been laboring under the disease from two to five days before their admission. The grade of fever accompanying these cases was decidedly typhoid; the pulse being frequent, soft, and quick; the skin dry; the inflamed surface and fauces dark red; mind dull and sometimes wandering; the tongue covered with a redish-brown coat and inclined to be dry; urine dark and scanty; and the bowels easily moved.

In a few cases the stomach was irritable, but not generally; and in four of the most severe cases there were frequent intestinal discharges of a thin redish-brown character.

Treatment.—The four cases last mentioned were treated exclusively with sulphite of lime in doses of from half a drachm to a drachm, repeated every two hours during the first day, and subsequently every three or four hours, until convalescence was established. To control the intestinal irritation, a teaspoonful of the following emulsion was given between each of the doses of sulphite of lime, viz.:—

R. Ol. Terebinth . . .	3j	
Tinct. Opii . . .	3j	
Pulv. G. Acaciæ	} aa 3j—Rub together.	
Sacchar. Alba		

And add—Aqua Menthæ . . 3j—Mix.

All the other cases were treated almost exclusively with the tinct. ferri chloridi, in doses of from 20 to 30 drops, repeated every two hours until the external inflammation ceased to spread, and then every three or four hours, until convalescence was established. In three or four cases in which there was trouble-

some gastric irritation at the time of admission, the treatment was commenced with four or five alterative doses of calomel with morphine.

In a few cases, moderate doses of quinine and opium were given to procure more rest at night. In all the cases, nourishment, in the form of animal broths or milk, was regularly administered, but no diffusible stimulants except tea or coffee. The time required to establish convalescence, varied from four to twelve days.

In fourteen of the twenty-one cases, the recovery after convalescence was rapid and attended by no unpleasant sequelæ. In the remaining seven it was more slow and tedious. Two had small cellular abscesses in the eyelids; one, a very protracted otorrhœa, with partial deafness and giddiness; and one had three distinct relapses or renewals of the erysipelatous inflammation, each time extending over the face, ears, and mastoid spaces. No deaths occurred from this disease in the Hospital. During the time the foregoing cases were under treatment in the Hospital, namely, the six months ending with the first of March, 1864, there came under my care, in private practice, in this city, forty-five additional cases of erysipelas. These were treated in the same manner as those admitted into the Hospital, and all except one recovered. The case that terminated fatally, was a female child only *four weeks* old. The erysipelatous inflammation attacked the vulva and nates, from which it extended gradually over the entire cutaneous surface, from the toes to the top of the head. It was accompanied by both vomiting and diarrhœa. It terminated fatally in eight or nine days after the attack. The whole number of cases that occurred in the city, during this epidemic, we have no means of ascertaining.

Causes.—No department of medical investigations is environed with more difficulties than that of etiology. Some have attributed the unusual prevalence of erysipelas in this city, during the past autumn and winter, to the impure and offensive condition of the Chicago river. It is certainly a fact, that, at the time the erysipelas became sufficiently prevalent to

attract attention, the Chicago river was in an extremely offensive state. The pork and beef-packing business had commenced, and sufficient blood and offal had been precipitated into the river, in connexion with the ordinary sewerage matter, to render the whole water in the channel a dark redish-brown color, and to cause the emission of a putrefactive odor, perceptibly tainting the atmosphere to the extent of half a mile from the stream. From a careful inquiry concerning the particular parts of the city in which the cases were located, Prof. E. ANDREWS came to the conclusion that much the larger number occurred in streets approximating the river; while the few cases, occurring in parts of the city remote from the river, were mostly in persons whose places of business were on or near that stream. These facts point directly to the conclusion that the poisonous and offensive effluvia from the river constituted the efficient cause of the erysipelas. On the other hand, a more extended investigation shows that sporadic cases of erysipelas had been occurring in the city during all the last half of summer, and were becoming more frequent before the meat-packing season had commenced. We are also informed that the same disease has prevailed more than usual in several places in the interior of the State. Hence we were led to infer that, while the bad condition of the Chicago river and of the water supplied to families throughout the city, may have increased the prevalence and severity of the disease, they were not the primary causes of it.

From all the facts we have been able to gather, we are much disposed to think that the prevalence of erysipelas has been only one of the manifestations of a general or wide-spread epidemic influence, disposing to diseases of a decidedly *Typhus* type.

This view is confirmed by the fact, that, coincidently with the prevalence of erysipelas in this city, the Typhoid, Typhus, and Puerpural fevers, have also been unusually prevalent. Thus, during the six months ending March 1st, 1864, there were admitted, into the medical wards of the Mercy Hospital, fifty well-marked cases of Typhoid fever. Of these, six died

and forty-four recovered. Of the six fatal cases, one was moribund at the time of admission, and died in twenty-four hours; there were admitted in the advanced stage of the disease, complicated with extensive pulmonary infiltration, and died during the first week after admission. The remaining two were under treatment, one thirty-eight and the other fifty-six days. Both died from local complications.

During the same period of time, there came under my care in private practice sixty-three cases of the same disease, of which two terminated fatally.

These figures certainly indicate a numerical prevalence of Typhoid fever in this city, considerably above the average for a series of years. Both from my own observation and from information furnished by other practitioners in the city, I am satisfied that true puerpural fever has also been much more prevalent during all the past winter than usual; and many of the cases have terminated fatally. Only five well-marked cases of this disease have occurred in my own practice, of which one died on the third day after the attack, and the remaining four recovered. About the same time that erysipelas was most prevalent, and when the water in the river and that furnished to the city through the hydraulic works, was extremely impure and offensive, namely, during the last half of October and the first of November, there occurred quite a number of cases of sickness of an unusual character, and a large proportion of which terminated speedily fatal.

Nearly all of these cases commenced with a harassing cough, moderate soreness in the air passages from the larynx to the bronchial ramifications, and a great sense of weakness or weariness. The pulse, during this stage, was not much disturbed, neither was the skin hot or dry; and the patients were able to be up and dressed. After these symptoms had continued from three to five or six days, there supervened suddenly a great sense of oppression across the chest, with great dyspnœa; a rapid pulse; cool extremities, and a rapidly accumulating tenacious mucus in the air passages. In six or eight of these cases the dyspnœa and apparent exhaustion increased so rapidly

as to induce death by apnoea in from eighteen to twenty-four hours. Several of the cases occurred in good families, and in an advanced stage of pregnancy. These circumstances, with the unusual character and rapid progress of the attacks, caused them to attract much attention. What was the nature of these cases? Was it erysipelatous inflammation attacking primarily the mucous membrane of the bronchial tubes, and subsequently extending by continuity to the air-cells, inducing universal capillary congestion of the lungs and consequent suffocation?

I think so, although no opportunities could be obtained for making *post mortem* examinations.

CEREBRO-SPINAL MENINGITIS—SPOTTED FEVER.—During the past year, and particularly during the last six months, a disease of rapid progress, and attended by a high ratio of mortality, has made its appearance in several localities in this State. There has been much diversity of opinion in regard to its nature, some regarding it as a specific local inflammation of the meninges of the base of the brain and of the medulla oblongata; some as a malignant form of scarlatina; while still others regard it as identical with the Spotted Fever or Sinking Typhus that prevailed in New-England extensively half a century since. It seems to have prevailed most in rural districts, and chiefly, thus far, in the central and southern parts of this State. Its attacks are not restricted to any class, sex, or age, although it seems to occur most frequently among the young. From the descriptions given by different practitioners whose opportunities for observation have been good, the disease varies in different localities, and in different cases in the same locality.

The following letter from my colleague, Prof. J. S. JEWELL, will give an account of the disease as it prevailed in one of the most southern localities in the State. This letter is as follows:

CHICAGO, *May 2nd*, 1864.

Prof. N. S. DAVIS:

DEAR SIR:—I give you, cheerfully, such information as I may have, in relation to the prevalence of epidemics, within the limits of this State.

During the past year, I have partially witnessed, and from

others have learned, of two epidemics, one of "cerebro-spinal meningitis" or "spotted fever," as it is called; the other succeeding it, of erysipelas. The former occurred during the latter part of the winter of 1862 and '3, and in the spring which succeeded it,—since which time it has almost if not quite disappeared, with the exception that it reappeared last winter in a few localities, thus evincing a disposition to prevail during the winter, and to subside on the approach of warm weather; the latter during the summer of the year 1863, and especially during the autumn and winter succeeding,—the cases of the disease (*erysipelas*) multiplying as the season advanced, until by or before midwinter it raged in some localities with epidemic violence. In the latter part of the winter, the disease declined until at the present time it cannot be said to exist as an epidemic.

The district of country to which I refer, is in the southern part of the State, about 60 or 70 miles from Cairo, to the N.E. in the county of Williamson, and others adjoining, in a part of the country as a general thing level and somewhat low, though occasionally broken—furrowed by sluggish streams, which are frequently bordered by extensive alluvial bottoms, with marshes interspersed here and there, and as a general thing heavily timbered, except when removed for the purposes of agriculture or interrupted by occasional oak openings, or barrens, and small prairies.

Except during the wet season, the streams seldom run. The water employed for domestic purposes, is mostly obtained from cisterns, which all the rains of the year contribute to supply; or from wells, the water from which is in almost all cases impregnated with salts, obtained in the clays and soils through which it passes, known amongst the people as "hard water."

The district to which reference is had, presents, in a geological point of view, the sandstone formations, immediately overlaid by the coal measures and carboniferous shales, which in many cases lie so superficial as to be exposed—occasional masses of limestone—hard retentive clays—drift and alluvium.

It may not be improper to state that between the years of

1852 and 1855 an epidemic of erysipelatous ophthalmia occurred throughout that section of country, but few persons escaping an attack, and in many cases attended by the most deplorable results. In conjunction with this, miasmatic fevers prevailed to an extent never known there before,—this latter form of trouble reaching its highest degree of prevalence in 1855; and from this period to 1857, the autumnal fevers were almost the sole representations of this class of disease. From the period last mentioned, a transition from the periodical to the continued type of fevers occurred, until, in the course of two or three years, fevers of a continued type almost entirely supplanted the autumnal fevers. This state of things remained until, within the past year, a *return* is indicated to what may in general terms be called a more sthenic type, with an increased number of cases of miasmatic disorder, with the notable exceptions I have referred to in speaking of the epidemics, and a general tendency, exhibited in many cases and in different kinds of disease, in strict conformity with the plainer manifestations of epidemic influence.

Many of the cases of "spotted fever" which *first occurred*, were variously supposed to be inflammation of the brain, "sun-stroke," &c.; and it was not until some time had elapsed that its true character was apprehended. The disease naturally excited the utmost interest amongst both physicians and people. Most of the cases which *first occurred*, died—many of them too speedily to admit of any remedial action. It was not till some time after the advent of this disease that I had an opportunity of witnessing it. I have seen some eight cases in all, most of them, at some period in their progress, under my care. They were all violent cases, and, with two exceptions, all died, one or two without *any* medication.

I cannot, within the limits of this letter, detail cases, but can only give briefly the results of my observations. Since I commenced writing this, I have received, according to request, a communication from Drs. Lodge and Samuels, of Williamson County, who have practised in the midst of the epidemics, and who have kindly furnished me the results of their observations and experience.

All ages and both sexes fell victims to the disease. Children, however, seemed most liable to it. I did not observe that any marked premonitory symptoms served to show its approach. Drs. Lodge and Samuels noticed, however, pain along the course of the facial nerve and in the back of the head, with a slight redness of the eyes and intolerance to light as the earliest symptoms;—the person, as a general thing, feeling usually well, until at or about the period of attack, which, so far as I have seen, is ushered in by a chill—the duration of which varied from 30 minutes to 3 hours. In all the cases I observed, reaction followed, varying much in intensity, and more characterised by *excitement* than *strength*. Drs. Lodge and Samuels, however, saw cases where death occurred without reaction, the chill presenting to them the characteristics the *same* as in “pernicious fever.” Sometimes the pulse was full, and but little accelerated. In the majority of cases, however, it was accelerated and diminished in strength—sometimes in volume.

There was nothing remarkable in the appearance either of the countenance or general surface—in most cases at *first*, and in some at no time. In *some*—perhaps *most* cases—at some period in the course of the disease, spots could be observed, neither regular as to the time nor place of their occurrence, and generally on those parts most remote from the central organs of circulation. However, they appeared sometimes on the trunk; and, if so, most frequently about the neck, breast, and shoulders. They were not permanent, and seemed to indicate *deficient capillary* circulation. With the exceptions mentioned, the circulatory system presented nothing remarkable; and in one case I observed, till death took place, the heart acted well and did not *cease* to act, until one or two minutes after respiration had ceased. The expression of countenance, if not that of distress, was dull and expressionless, or disfigured by convulsive action of the muscles of face. After the chill, the heat of surface was almost always above what is natural (till death in some cases); in others the heat of surface passed away, and generally with profuse perspiration.

As to the muscular system, there was generally restlessness

from the beginning, followed by various irregular movements, and which, as the disease advanced with indications of coma, were increased to a greater or less degree in violence, especially in the case of children, where severe convulsions frequently occurred,—the attack varying in duration and frequency.

There were also permanent spasms of the voluntary muscles in all cases I saw, which affected *first* the extensor muscles of the back, subsequently the flexors of the limbs. The head, in most all cases, was thrown back, and *violently* so, after the full advent of the disease, and in one case remaining *so* till the end of the third week or longer. Of the muscles of the eyeball, the superior and internal recti-muscles were almost invariably contracted. According to Drs. Lodge and Samuels, the tongue was kept in constant motion, as if to remove something from the mouth. Of the muscles of respiration, the diaphragm was most frequently affected, the respiratory movements being thoracic. I had no particular evidence of trouble in the case of those muscles, supposed to be under the control of the organic nervous system. There was also, as I omitted to state, spasm of the muscles of mastication, and of the muscles of deglutition, in some cases, so that swallowing was difficult or impossible. Both sides of the body seemed in such cases equally affected. Tongue coated—whitish coat, but moist; bowels either constipated, or in good state; in other respects, nothing remarkable concerning digestive system. The secretions did not vary, in a general way, in any remarkable respect from the same in health. I regret to say I did not examine the urine, from want of proper facilities. Drs. Lodge and Samuels, however, observed it as scanty, at the outset, in many cases, and high-colored, and subsequently more copious, with an ammoniacal odor, and sometimes loaded with albumen.

As to the symptoms referable to the nervous system, they were by far the most important and significant.

There was in all cases pain in the head—generally in the back part—and extending down the neck and back, and occasionally excruciating in its character. Restlessness and delirium, or a disposition to it, which in most cases rapidly

increased, were the most prominent symptoms, at the beginning of the attack—the restlessness increasing until the occurrence of convulsive movements of various degrees of violence. The delirium in most cases increased rapidly, and was succeeded by coma. The delirium was in some cases furious—dilated pupils—(though Drs. Lodge and Samuels sometimes saw them contracted)—heavy stertorous breathing, or, in some cases, short and hurried, and sibilant or *hissing* respiration, much increased by a rapid accumulation in the throat of mucus. Before loss of consciousness, there was frequently double vision, ringing and roaring sounds in the ears, with impairment, in various degrees, of the special senses. The order in which these latter symptoms sometimes occur, may be illustrated by reference to a case.

When I first saw the patient, he had been sick but two or three hours, and was, at the time referred to, partially conscious. Would respond, but not readily, to a question asked him; special and general sensation seemed not much impaired; in a few minutes he could not hear, as was evinced by calling him loudly. The pupils of the eyes were now much dilated, and did not respond to a strong light; nasal passages insensible to carb. of ammonia; and lips and tongue, to the tr. capsicum. General sensation seemed, if not gone, much impaired; and spasmodic muscular movements—ceased first in the upper, *last* in the lower, extremities—and in both sides simultaneously. Diaphragm apparently ceased to act. A few attempts at purely thoracic respiration was made, and the patient ceased to breathe. The heart, however, continued to act well to this period, and did not cease to act until nearly two minutes after respiration ceased. This, however, was not always, even in rapidly fatal cases, the manner of procedure. In nearly all cases, the *motor* function was *first* involved; the sensory *last*, and in various ways and degrees. In one case I observed increased sensitiveness of the surface, from the commencement of the attack until the end. The case recovered. In other cases, for a time, apparently, Drs. Lodge and Samuels observed the same in *most* of their cases.

The manner in which the symptoms referable to the nervous system occurred, left the impression on my mind that on the great ganglia at the base of the brain, but especially the medulla oblongata and the adjacent membranes, was expended the chief influence of the morbid agent, whatsoever it may be; and in most cases from *this*, as a centre, the unhealthy action invaded the spinal cord, on the one hand, and the brain proper on the other.

The course of the disease was most always rapid; though it might, in the more favorable cases, continue for weeks to terminate either fatally, in the end, as it frequently did, or in a slow recovery. Drs. Lodge and Samuels saw cases in which the disease, or its legitimate effects, remained for months before death or recovery. The prognosis, as I witnessed, was in almost all cases unfavorable, even after recovery seemed in view; but the physicians above-named were disposed to take a more favorable view from their experience. They distinguish two forms of the disease—one mild, without severe symptoms—referable to the nervous system, but in other respects resembling the more *severe* form of the disease. This latter form with them, as with others, has proved almost unmanageable, *unless seen early*, when there seems to be a much better chance for benefit. In the worst cases, from a state of apparent health the patient would experience the attack, and sometimes, in the space of two or three hours, would be dead. The disease appeared to be complicated with malarious influence, and most of the cases of any duration exhibited a decided periodical tendency. This seems to have been the case in an especial manner in the practice of the above-named physicians, and in the milder cases particularly. The epidemic, as they observed it, appeared in its greatest virulence in one of the most malarious districts in the range of their practice. The two epidemics (spotted fever and erysipelas) were commingled in the practice of these gentlemen occurring at the same time and in the same place, inducing in them the opinion that the two forms of disease were connected by some link common to both.

No opportunity, so far as I am aware, has been offered any

one there to make an examination of the dead body. I had none. I examined slightly the blood of *one* patient, in particular. The most remarkable condition was the firmness of the coagulum and thickness of the fibrinous or *buffy coat* which, in a clot of two inches in thickness, occupied $\frac{1}{2}$ or $\frac{1}{3}$ the entire thickness of the same.

The treatment found most beneficial consisted in outward applications of a highly stimulating character throughout the entire length of the spine, such as a saturated solution of camphor in oil of turpentine, blisters to the back of the neck and head, warm applications to the extremities, attention to the state of the bowels, alterative doses of mercury, in conjunction with camphor, valerian, ipecacuanha, nitrate potash, &c., and in a few cases quinia—particularly in those cases exhibiting a tendency to periodicity and at an early period in the disease. The quinia did not seem to answer in all cases, and in none so well in the latter stages of the disease as in the earlier.

In *all* the cases, whether mild or severe, Drs. Lodge and Samuels had occasion to treat, the *quinia* in *large* doses, in combination with full doses of *morphia*, seemed to be the most successful mode of treatment. After they had tried a long list of remedies—most all without any apparent benefit—the quinia and morphine are selected as the most efficient agents in its treatment. In some cases, however, it seemed of no avail. Brandy, wine, spts. nit. dulc., &c., were well borne, and in a general way all such measures as had a tendency to support and stimulate the nervous centres, in conjunction with *severe* revulsive measures, such seemed to be the most successful course for the onset of the disease; but, in cases of any duration, such treatment was not the most beneficial, after a few days, requiring a course more distinctly alterative and less stimulating, as some of the cases seemed to become acute, somewhat in character, if they passed on for several days or weeks, calling for a course of treatment much the same as that indicated in the latter stages of an attack of inflammation of the brain, with this difference, that the use of stimulants could not be dispensed with, though restricted in their use. Iodide

potassium and stillingia, iodide of iron, mercurials, and conium, belladonna, hyoscyamus, &c., were all employed, either by Drs. Lodge and Samuels, or by myself—sometimes without benefit. Counter-irritants were employed throughout the disease, and were in a high degree beneficial, when *freely* employed. Sedatives, and especially those supposed to exercise such an influence over the brain and spinal cord, did not do well, nor, as a general thing, *any* sedative measures. Blood-letting I tried, but did not find any benefit, but rather harm; nor did cold to the head answer well in my experience, though it appears Drs. Lodge and Samuels regarded it more favorably.

Sulphite of lime was tried in one or two cases, and the muriated tincture of iron, but without any appreciable effect. They were administered, however, in conjunction with other remedies. This I did under the apprehension that the disease might be erysipelatous in character. Strychnia was administered in the latter stages of some cases, with the view of relieving the local or the general paralysis which constituted one of the sequelæ of the disease, and with ordinary benefit.

The epidemic of erysipelas occurred within the year 1863, and especially in the latter part of the year, and was somewhat peculiar in character. Its favorite seat seemed to be the mucous membrane of the throat, from this point extending to the nostrils on the one hand, and from thence to the face and head externally, and occasionally to the larynx. Such cases very frequently died—some of them, the diseased action appearing to pass through the cribriform plate of the ethmoid, and in this way extending to the membranes of the brain. Though this was the most usual seat of the disease, it attacked indifferently any part of the body and all ages.

In localities where the epidemic influence was most conspicuous, cases of puerpural fever occurred after nearly every case of parturition, and such cases almost invariably died. Most of the cases of erysipelas were easily managed, and in all respects the treatment was that which experience has declared best as a general thing in such cases.

I have not been able to obtain as full information concerning

these matters as I could desire, nor could I give it within the limits of this letter.

I am, Dear Sir,

Yours truly,

JAS. STEWART JEWELL.

DR. HINCKLEY, of Leland, in the central part of the state, attributes to the disease, as it appeared in that locality during the past winter, substantially the same symptoms. All the accounts we have seen concerning it, agree that it is characterized by no special premonitory symptoms, but is generally ushered in by a chill; pain in the head, neck, and extremities; rapid impairment of the special senses, with loss of strength; frequent pulse; hot skin; rigidity of the muscles of the neck, jaws, and sometimes of the extremities; red or purple spots on the surface; frequently convulsive movements followed speedily, by coma and death.

The duration of the disease is generally short, many patients dying within twenty-four hours, while others linger many weeks. In the most malignant cases, the chill and pain in the back of the head is followed almost immediately by loss of vision; rapidly-increasing stupor; rigidity of the muscles of the neck; convulsive movements or paralysis of the extremities; irregular respiration; very frequent or variable pulse; general suppression of secretion; capillary congestion or petechial spots in the skin; and, in from six to twenty-four hours, death. In attacks of less severity, the chill is followed by febrile reaction of greater or less intensity; rigidity of muscles, especially of the neck, back, and jaws; extreme restlessness; mental dulness; red or purple spots on the surface; diminished, but not suppressed secretions; impaired muscular action, which, in the progress of the disease, sometimes amounts to paralysis, especially of the sphincters, thereby allowing dribbling of urine and involuntary focal evacuation.

In the advanced stages, the pain is sometimes transferred suddenly from the head to the extremities; and the final convalescence of the patient is slow and tedious.

Diagnosis.—Most of those who have written about this dis-

ease, claim that the diagnosis is easy. From typhus, or any form of continued fever, it differs in the absence of premonitory symptoms; in the suddenness of the attack; in the well-marked chill; in the muscular rigidity; in the greater intensity and more circumscribed character of the pain; in the more immediate impairment of secretion and organic changes; in the earlier appearance of red or petechial spots; in its disposition to attack the young; and in the absence of the odor usually belonging to typhus. Yet Dr. NORTH, who wrote a very interesting paper on "Spotted Fever" in 1812, and most of the earlier writers regarded the disease as a variety or modification of Typhus. From pernicious intermittents and remittents, it differs still more widely. And certainly the absence of all soreness of the throat, swelling of the glands of the neck, exanthematous rash, and desquamation of the cuticle, should prevent it from being confounded with scarlatina.

Post Mortem Appearances.—The effects of this disease, or the appearances after death, vary much, according to the duration of the disease. In those cases terminating fatally, within the first twenty-four hours, little or no structural change is visible in any part of the body. The blood is dark and its coagulability impaired; the venous capillaries generally congested or full, especially in the base and posterior parts of the brain and its membranes; and sometimes ecchymosed spots in the interior of the larger bloodvessels. If death has taken place at a later period of the disease, the membranes of the base and posterior parts of the brain are generally intensely red, with effusions both plastic and serous; the cerebral substance also injected and often softened; the muscular structures darker color and softer than natural; the lungs often passively engorged; and the kidneys often exhibiting appearances of fatty degeneration or the accumulation of fat globules in their cortical substance. The urine has often been found albuminous, both before and after death.

Pathology.—Such is a very brief glance at the symptoms, progress, and results of one of the most fatal diseases with which the physician has to contend. But what is its nature?

Where is its primary seat? And what are the correct indications for treatment? These are the all-important, all-absorbing questions with the practitioner at the bedside of his patient. Some regard it as a simple active inflammation of the medulla oblongata and base of the brain with their investing membranes. And hence the name "cerebro-spinal meningitis." That such local inflammation does occur in the progress of the disease, when it does not prove fatal in the first few hours, is clearly proved both by the symptoms and *post mortem* appearances. But is this the primary and essential part of the disease? Or is it merely an accompaniment, like the sore throat in scarlatina, the pustules in variola, or the affection of Peyer's glands in typhoid fever?

If we concede that the cerebro-spinal inflammation is primary and constitutes *the* disease, is that inflammation sthenic or asthenic? Are the properties of the structures involved, exalted, or impaired?

But a large proportion of those who have expressed opinions in relation to the disease, during the last few years, claim that the local inflammation is secondary; that the primary disease consists in a poisoned condition of the blood. "Blood-poisoning" has become a very fashionable term in modern pathology, and bids fair to supersede the magic word "*bilious*," which has so long served to explain all the ills of life.

But on the supposition that the disease, or its active phenomena, depends on a toxic or poisoned condition of the blood, what is the nature and whence the origin of the poison? There are two modes by which the blood may become impure or poisoned.

First, by the introduction of poisonous agents from without; as by the inhalation of an atmosphere impregnated with deleterious agents; by absorption of poisonous material from unhealthy, suppurating, and gangrenous surfaces; and by direct inoculation with poisonous viruses.

Second, by a failure of one or more of the excretory organs to eliminate from the blood the effete material as fast as it is derived from the metamorphosis of tissues. Thus a failure in the healthy action of the skin, lungs, liver, and kidneys causes

a corresponding failure in the secretion and elimination of perspiratory matter, of carbonic acid gas, of cholesterine and coloring matter of bile, and of urea, &c., and consequently an accumulation of these substances in the blood. There are two ways in which the deleterious agents introduced into the blood by either of the above methods, may produce their morbid effects. First, by acting directly on one or more organs or structures by contact, the blood being only a menstruum for holding the poison in solution and conveying it to the different parts of the system. Secondly, by acting primarily on the constituents of the blood itself, in such a manner as to impair their properties and render them incapable of performing their functions; and in some instances, at least, the action on the constituents of the blood is such, as to rapidly reproduce or multiply the original poison, as in the contagious fevers. When a deleterious agent acts in accordance with the first of these methods, the result is not properly a *blood disease*; but when its action is in accordance with the second method, it produces a true "blood poisoning," or "blood disease." It matters not whether the poison enters into actual combination with one or more of the ingredients of the blood, or whether it only induces morbid changes by its presence, analogous to well known catalytic action out of the living system, it, in either case, produces a primary blood disease. If cerebro-spinal meningitis or spotted fever depends on the action of a distinct or specific poison, does it originate exteriorly and gain access to the blood by inhalation and absorption; or does it originate from some combination of effete material retained within, from defect in the excretory functions?

When the poison is actually in the blood, does it produce the active phenomena of disease by acting directly on one or more of the organized structures, or primarily on the blood itself? These questions are both interesting and practically important. But observations hitherto made, concerning the circumstances under which the disease occurs, are so defective that a perfectly satisfactory answer cannot be given in the present state of our knowledge. We shall never be able to trace, satisfactorily, the

causes of epidemics, until accurate registries have been kept in considerable numbers, containing an exhibit of the thermometrical, hygrometrical, and electrical conditions of the atmosphere at the time such diseases make their appearance and during their prevalence. We need also a record of the previous physical condition and habits, and the condition of the lodging rooms, of each individual attacked, in any given epidemic. With an exact knowledge of all the important atmospheric conditions, and of the personal hygiene of the individuals attacked, it is highly probable that the efficient cause of the disease could be made apparent.

From the fact that the disease has prevailed more in rural districts than in cities; more frequently after extreme cold weather than at other periods; more with the young than the aged; while the topography of the several districts in which it has occurred is widely diverse; it is difficult to conceive of the production and diffusion of any one specific atmospheric poison under circumstances so variable.

And yet the suddenness with which the disease attacks its victim; the rapidity of its progress; and the uniformity with which it leaves traces of morbid action in certain structures; certainly indicate the action of some subtle and energetic poison. Whether it is derived from without or generated within, its primary action seems to be directly on the *vital affinity* of the tissues, so far suspending it as to impair all the organic changes, and thereby retard the movements of the blood in the whole capillary system of bloodvessels, indicated by rapid suspension of one function after another and the early appearance of purple or ecchymosed spots. But while the cause thus evidently influences generally that property of the living structures which we call *vital affinity*, it plainly manifests a special tendency to act on the serous surfaces, more especially those investing the cerebro-spinal portion of the nervous tissues, but sometimes also the pericardium, pleura, and endangium or interior lining of the vascular system. And hence it is, that, in all cases except those cases which terminate fatally in a few hours, we find evidences of severe disease in one or more of these membranous

structures. In the sudden general derangement of the system, followed so speedily by the tendency to asthenic inflammation in the cerebro-spinal meninges, or other internal membranous structures; as well as the frequent prevalence of the disease coincidently with that of erysipelas in the same neighborhood, there is suggested a close analogy between the two diseases.

Treatment.—But whatever theories we may adopt in relation to the disease in question, it is evident, from both symptoms and *post mortem* phenomena, that there are two principal sources of danger to the patients. First, from direct suspension of organic actions and death before reaction or local inflammation can be developed. Second, from the supervention of inflammation, chiefly, but not exclusively, in the cerebro-spinal centres. Such inflammation being of an asthenic character, its danger is greatly increased by the general derangement both of the blood and the properties of the solids. Whether we regard the severe and fatal epidemic which has prevailed in many localities during the past year, as a primary local inflammation, as a general disease of zymotic origin (that is, from occult atmospheric poison absorbed into the blood), complicated with local cerebro-spinal inflammation; or as a local disease of the excretory organs, allowing the blood to become poisoned by retention of urea or any other effete material, the real indications to be fulfilled by the practitioner at the bedside are, first, to maintain the vital properties, and consequently the atomic or organic changes throughout the various structures of the body; second, to restore general secretion, thereby eliminating whatever poison may exist in the blood, or to neutralize it without elimination; third, to counteract the known tendency to the development of dangerous local inflammation; and fourth, to combat such local inflammation after it is developed. The relative importance of these indications differs according to the severity of each individual case. In those severe and highly malignant attacks, in which the life of the patient is endangered by the direct and immediate suspension of the functions, not only of the cerebro-spinal centres but also of capillary and secretory actions generally, the two first indications are of para-

mount importance. But in all those cases in which the attack is less severe and febrile reaction becomes readily established, the two last indications assume the highest importance. While we feel no doubt about the general correctness of the foregoing indications for treatment, we freely acknowledge a feeling of embarrassment in recommending the individual remedies most efficient for fulfilling them. This embarrassment is increased by the well-known fact that the success of almost every remedy depends, not simply on its abstract qualities, but very much on the time and mode of its use.

The practitioner standing at the bedside of a patient, just prostrated by a chill or condition of extreme organic depression, and realizing that every hour is carrying him nearer to the point of fatal suspension of all the functions, what can he do to arouse the nervous, capillary, and secretory susceptibilities, so promptly as to restore the functions of these various structures, and thereby carry the patient safely beyond the first and most dreaded period of danger? Perhaps no one agent judiciously managed exerts more speedy and direct influence over the elementary properties of living tissues, whether nervous, vascular, or secretory, than free caloric and electricity. It has long been known, especially among the more eminent practitioners in the States bordering on the lower Mississippi and Gulf of Mexico, that one of the most efficient means for arousing the susceptibilities of the system, so as to establish reaction in pernicious intermittents, consists in thorough dashing of cold water over the whole surface, with alternate wrapping in warm blankets. The same process was found more successful than any other, for the same purpose, by Dr. ANDERSON, of Alabama, in one of the most malignant and fatal epidemics of scarlatina that ever visited that section of the country. We would suggest a modified form of the application of this remedy in the first stage of cerebro-spinal meningitis, or spotted fever. We would apply cold, by bags of pounded ice, if possible, to the occiput, cervical and upper part of the dorsal spine, and at the same time cloths wet in water as warm as can be borne by the hand, constantly to the whole epigastric and abdominal

regions, and also to the lower extremities. At the same time, we would administer internally, not diffusable stimulants or inebriants, nearly all of which, either directly or indirectly, retard the play of vital affinities, and consequently of organic or atomic changes in the tissues, but true organic stimulants.

Among the most active and reliable of these, are oxygen, phosphorus, cantharides, guaiac, turpentine, arsenic, and the chlorine and mineral acid salts.

The first, from its gaseous form and consequent inconvenient portability, can never be made extensively available in practice. The second, phosphorus, from its strong affinity for oxygen and consequent spontaneous inflammability, must also be excluded, to a great extent, from general practice; while its compounds, whether phosphates or phosphites, are comparatively inactive. No such objections, however, can be made to the remaining articles enumerated. A well-prepared tincture of cantharides constitutes one of the most speedily acting and efficient organic stimulants that we possess; and, in the stage of depression at the outset of the disease, we would give it in doses of from 20 to 30 minims; first, every hour; and subsequently, every two, three, or four hours, according to the effects.

If erysipelas was prevailing to any extent in the same locality, coincidently with the disease under consideration, we would add to each dose of the tincture of cantharides an equal quantity of the muriated tinct. of iron. In addition to either one or both of these remedies, we would also give moderately full doses of a solution of either chlorate of potassa or sulphite of soda, combined with tinct. of belladonna. A solution of about fifteen grains of either of these salts, with the same number of minims of the tincture of belladonna, may be given between each of the doses of cantharides.

The objects designed to be accomplished by this combination are three, namely, to increase the capacity of the blood for holding in solution oxygen gas, and thereby induce a greater absorption of that powerful organic stimulant from the inspired air in the pulmonary air cells; to lessen the tendency to septic or necremic changes in the blood itself; and to induce contrac-

tion of the capillary vessels of the cerebro-spinal nervous centres, so as to relieve them of that passive congestion which we believe constitutes the first step in the development of the severe inflammation which so generally supervenes in that locality. That the salts here named have the power to increase the capacity of the blood for absorbing and holding in solution oxygen, has been clearly demonstrated both by experiment and clinical observation. Several years since, M. BERNARD, by a well-devised series of experiments, fully established the fact, that solutions of nearly all the saline compounds, when present in the blood out of the body, increased in a notable degree the capacity of that fluid for the absorption of oxygen.

Since those experiments, several cases of cyanosis have been reported, in which a free exhibition of chlorate of potassa in solution, promptly changed the venous color of the blood to an arterial hue, so long as the salt remained in the blood. We have also several times obtained the same results in two cases of cyanosis from defective closure of the foramen ovale of the heart. The result is not obtained, as some have supposed, by the liberation of a portion of the oxygen of the salt, for the latter is soon eliminated through the kidneys, unchanged in its composition. That this power to increase the capacity of the blood for absorbing oxygen from the air in the lungs, is a very important one, not only in the depressed stage of the disease under consideration, but in certain stages in many other affections, few reflecting pathologists will deny.

That these salts, and especially the sulphites, are capable of retarding or arresting a septic or necremic change in the blood, we have sufficiently shown in another part of this report. The last effect proposed to be accomplished by remedies, namely, contraction of the capillaries of the cerebro-spinal centres, depends on the belladonna.

We presume all the members of the Society are familiar with the experiments of Brown-Séquard for determining the action of certain substances on the cerebral circulation and functions, by which he deduced the fact that belladonna, stramonium, and ergot, were each capable, when taken internally, of inducing

contraction of the cerebro-spinal capillaries, and thereby diminishing the amount of blood in them, together with his application of the knowledge of this fact to the treatment of certain forms of paralysis. If the results of his observations are correct, and our clinical experience has thus far confirmed them, no remedy could be selected calculated to so directly counteract the development of cerebro-spinal inflammation or congestion, as the belladonna. Such are the means and the reasons for their use, on which we would rely for the treatment of the early stage of this most formidable disease. If they meet this stage successfully, the disease is arrested and convalescence ensues, without the interposition of other remedial agents.

But if these remedies were only partially successful, or we were not called until the first stage had passed, and the cerebro-spinal inflammation was more fully developed with general febrile reaction, we should omit the cantharides but continue all the other remedies and applications recommended in the first stage, with the addition of thorough dry cupping over the cervical and dorsal portions of the spine, and the cautious administration of alteratives and diuretics, being cautious to avoid active purgation or any other strongly depressing influence. Such are our views of the treatment of this formidable malady, based, we admit, upon rational, or, if you choose, theoretical, deductions. And yet they are not wholly without the practical test of experience. For we have been called to treat five strongly-marked cases of this disease during the past year.

We would not leave the impression, that the plan of treatment here recommended, or any other, will cure every case of cerebro-spinal meningitis or spotted fever. For we are well aware that in all severe epidemics, whether of typhus, yellow fever, scarlatina, variola, erysipelas, spotted fever, or cholera, cases occur in which, from the first hour of the attack, the elementary properties of the tissues, on which all organic changes depend, are so profoundly depressed, or, more properly, so nearly suspended, that no remedial agents will make any impression whatever. But do or give whatever you please, the various

functions become steadily more and more feebly performed, until in a very few hours life becomes extinct—leaving but little visible traces of morbid action in either the solids or fluids of the body.

ARTICLE XXVI.

CASE OF HYDROPHOBIA.

By R. S. ADDISON, M.D., Chicago, Ill.

On the 28th of June, 1862, about 9 o'clock, p.m., I was called to see Mrs. P—, a Norwegian, aged 32. She complained of a “lump” in the throat, a slight sick headache, a creeping sensation over all her body, but especially along the spine,—the latter being always in an upward direction. Her countenance was pallid, her eyes somewhat glaring and restless,—the pupils being dilated, her tongue was lightly coated white, except along the edges and tip, which wore a purplish appearance. The temperature of the skin was little above the normal standard, though the pulse was beating at the rate of 100 per minute. Upon her upper lip and forehead were the remains of what appeared to have been small lacerated wounds, but not exhibiting the least sign of pustulation.

As it was rather dark, I opened a window at the head of the bed on which she was lying, for the purpose of admitting a little more light, and the following instant I perceived some spasmodic action in the features; she at the same time raised herself up, and very abruptly closed the window, saying it made her feel cold—although at this time there was scarcely a breath of air to be felt.

Upon this I expected Hydrophobia to be present; and, with the view of testing the correctness of my suspicion, I took a little pulv-Doveri from my pocket-case, mixed it with an ounce of water, and requested her to swallow it. After some little hesitation, she carried it to her lips and withdrew it again; but, upon my urging her to do so, she gulped rather than drank it down, and, with a slightly-perceptible shudder, set down the cup.

I then, in company with her husband, left the room, promising to send her something that would relieve her, and she seemed satisfied. When we were out of her hearing, I asked her husband if she had ever been bitten by a dog, and he replied that she had, under the following circumstances:—

They had recently moved from another portion of the city, and a pet dog which they kept had gone back to the premises they had vacated. The husband set out and brought it back, leaving injunctions with his wife, as he locked the dog in a shed, to keep him there a few days until he became reconciled to the change. (I ought here to remark, however, that, in capturing the dog, he was also bitten by it upon the hand—for which he beat him, and was bitten a second time.) Mrs. P—, a few hours after the dog had been locked up, opened the shed door and commenced scolding him for his truancy; in an instant he sprang upon her, and, after tearing her dress into tatters, bit her in the face and upon the forehead, and rushed from the house, and was not afterwards seen by them.

On receiving the account, I felt *assured* that I had a case of true Hydrophobia to deal with. My next thoughts were—what shall I or can I do?

I prescribed tincture valerianæ, alternated with hydrarg. chlor. mit. and morph. sulph. every three hours, with a view to giving some relief to the patient, and gaining time until I could consult authorities on the subject.

The following morning I called and found my patient had passed a restless night, and seemed rather worse. She complained sorely of thirst, and said that, when she attempted to drink, a lump would rise in her throat and almost choke her. I requested her to drink whilst I was there, so that I might witness its effect upon her. She took a mouthful of water, threw the cup away from her, and grasped her throat violently with one hand, whilst she pressed the other upon her breast, trembling extremely at the same time.

I called Prof. BYFORD into consultation, and we agreed to continue the opiate in larger doses, ceasing the administration of the valerianæ, and watch for the result of the hydrarg.,

hoping that if we could get up sufficient alterative action, we might possibly find the case more tractable. We were doomed to disappointment, however; for it appeared to exert no further influence than to produce a few small discharges from the bowels.

With Prof. BYFORD's concurrence, I proposed to administer chloroform by inhalation—as Dunglison, in his "New Remedies," relates instances where it is reported to have effected cures; but the patient had such a dread of it, on account of its somniferous influence, she begged us to try something instead, first. We then administered *P. opii gr. j.*, every two hours. Up to this period—the end of the second day—she was unable to eat, although there was apparently nothing to prevent it except occasional spasms of a tetanoid character.

On the third day, I found all the symptoms of a more grave character. Pulse extremely small and irregular, but, on the whole, more accelerated than during the two previous days. She feared being choked to death. Temperature of surface, alternately high and low; features cadaverous, and at times covered with clammy perspiration; eyes surrounded by a dark areola; pupils alternately contracted and dilated; hunger and thirst intense, but accompanied by inability to swallow anything more than about a drachm of fluid at once. Efforts to take more than this amount, produced horrible contraction of the facial muscles; and the *platysma myoides* particularly, and the extraordinary portion, would be sure to be ejected through the mouth and nostrils.

She at this time evinced great exhaustion. Her manner of breathing now commenced to be very laborious and irregular. The act of expiration was accompanied by a sort of stertor, resembling, somewhat, the cough of a person troubled with laryngitis, the only difference being that it was harsher, and made with much greater effort. This, I suppose, is what is popularly termed the "barking," in such cases.

At this stage I informed her of the probable termination of her case, and urged her to inhale the chloroform, but she again refused: this time, however, with the understanding that if she

were "not better to-morrow," she would permit me to do what I might consider best. During this day, she obtained partial relief by the exhibition of *P. opii gr. j.* every hour, during the earlier, and every half hour during the latter part of it.

Through all this time, she was rational and patient. Her husband's fears had caused him to remove her two children from the house, but she requested that they might remain at the window, so that she might see them at least. She could not now bear the window or door open,—the slightest breath of air being productive of frightful contortions of the whole body.

At 10 o'clock, p.m., of the third day, she complained of suffocation, and begged her husband to go to the door with her "to get a breath of air." He did so; and, after remaining about 30 seconds, she returned into the house and went to bed. About 11 o'clock she called for water, and he gave her about half a teacupful; she readily drank nearly the half of it, and, saying "It is hard so, but I must die," she sighed deeply, shuddered and died, thus preventing a trial of the chloroform.

Some of the circumstances attending this case are remarkable, as they conflict the written authorities; for instance:—Instead of a red, animated countenance, we had an extremely anxious, careworn and pallid one. Again; the horror, said to exhibit itself on the sight of fluids, did not exist in this case till after the trial to drink; and drinks were generally, in this case, received with fervor. Again; there was no grinding of the teeth, which we are taught to look for as a prominent symptom; and the tumors spoken of by Cooper, as existing under the tongue, did not show themselves; and, last of all, we have positive knowledge that the disease set in on the eighth day after being bitten; and, where the biting was done, she had no pain or itching.

Selections.

OF HEART-CLOT AS A CAUSE OF DEATH IN DIPHTHERIA.

By J. FORSYTH MEIGS, M.D., Fellow of the College of Physicians of Philadelphia, one of the Physicians to the Pennsylvania Hospital.

Reprinted from the "American Journal of the Medical Sciences."

It is now somewhat less than four years since my attention was directed to the formation of coagula in the cavities of the heart, as a cause of death in certain cases of diphtheria.

The *first case* in which I observed this accident, or result, occurred in my own practice, in November, 1860, in a little girl, between six and seven years old, healthy in every respect, and born of vigorous parents. She was one of four children, all living at the time, and this case was the only one which then occurred in the family. The attack was severe, the deposit covering the whole of both tonsils, the uvula, and a considerable portion of the posterior surface of the pharynx. The external lymphatic ganglions were very considerably implicated, the swelling and soreness being marked, but there was no œdema under the chin. The constitutional symptoms were severe, but not malignant, the appetite, in particular, being almost null. The treatment consisted of stimulants and nutrients internally, and of cayenne pepper infusion applied to the fauces, and a stimulant embrocation used externally. At the end of the second week, the disease had seemingly yielded, and, on the nineteenth day, the local symptoms had disappeared. The strength was so much improved that the child sat up in bed from time to time stringing beads, and, in the morning of the day named, she was placed in a large arm-chair for an hour. This was the first occasion on which she had been allowed to leave the bed after the onset.

On the afternoon of that day (the nineteenth) the patient was not so well. She was paler than she had been for some days, seemed weaker and more listless, and was more restless the night following than for some nights before. On the following day, there was again the same listless appearance about the child—a weariness, inattention, paleness of the face, a weakly pulse, poor appetite, but nothing more express. Towards evening, I was still more struck with this appearance of

general and inexplicable debility. And yet the muscular power was not seemingly much reduced, for, though there was no desire to sit up, the child moved freely in bed, turned, rose up and lay down without any difficulty whatever. The pulse, though feeble, was regular, between 90 and 100; the respiration easy, and no abnormal sounds to be heard either in the lungs or heart.

On the following day (the twenty-first) in the morning, I was, for the first time, seriously alarmed. The general expression was most curiously that of intense weariness, of extreme lassitude, without the slightest appearance of pain or distress anywhere. The circulation, however, was evidently failing. The pulse was still not over 100, its rhythm was correct, but the force of the arterial pulsations had lessened and become somewhat irregular, so that they were smaller and feebler than natural, and some much feebler than others. The temperature of the body was normal. The color of the surface was paler and whiter than usual, but there was no cyanotic tint of any part. The muscular movements, as performed in bed, were natural, quick, and sometimes petulant. The patient could lie in any position, used but one pillow, had no disposition to be raised up, and gave no sign whatever of even a tendency to dyspnoea. The mind and senses were as bright as ever, and the temper, beyond occasional slight fretfulness, was good. There was no appetite, but she took milk punch and stimulants when desired.

I now examined the lungs most carefully. There was nothing abnormal about them. Then turning to the heart, which I now felt must be the seat of trouble, I sought for endocarditis or pericarditis, but, in the absence of distinct murmur or friction, of increase in the area of dullness, or of altered position of the apex-beat, and, determined too by the entire absence of fever or pain, I was satisfied that there was no acute inflammatory condition to explain the state of the circulation. What remained? The formation by slow, but continuous, concretions, within the cavities of the organ, of a mechanical impediment in the systemic circulation, the external signs of which were to be seen in the gradual, but relentless, failure of the child's vitality, and especially in the weakening pulse, and the pale surface, whilst there was not a sign of cerebral, pulmonic or digestive disorder of a serious kind. Though I have said there was no murmur nor friction in the heart-sounds, there was a curious deviation from the natural condition, which it is difficult to describe. The sounds were confused, indistinct, and seemed as though reduplicated.

From this time the patient grew gradually worse. Stimulants with bark were freely administered, but to no purpose. The pulse became smaller and more feeble, and irregular in force, though not in rhythm, until finally it was a mere thread. The general pallor became deeper, but without cyanotic hue. The face was somewhat flushed, but, in other respects, natural. There was no trace of dyspnoea, no pain, no clouding of the mind, no cough, no febrile heat, and, a few moments before the child died, she spoke out in clear, distinct tones, and turned without any difficulty in bed, suddenly, and with force. The death was sudden, as in other cardiac diseases, about eight o'clock in the evening of the twenty-first day.

I regret that no examination of the urine was made either before or after death. At that time my attention had not been drawn so decidedly as now to the condition of the renal secretion.

Autopsy.—The lungs and digestive organs presented nothing abnormal. The pericardium was quite natural. The heart appeared somewhat larger than usual, owing to the fact that the right auricle was distended with a dark, jelly-like mass of coagulated blood. A large coagulum was found also in the right ventricle; this was firm, yellowish-white in color, adherent to the interior structures of the cavity, and, from its appearance, had evidently been some time in forming. A smaller coagulum was found in the left ventricle.

Of the *second case* I have but few notes, and therefore its history will be brief and imperfect. The subject was a girl between 7 and 8 years old, of good health. She was one of quite a large family, in which the disease was epidemic, the fatal case having been preceded by a very severe one, which, however, ended favorably, in a younger child, and being followed by another fatal case from croup, and by a less severe one in an older child.

This case began January 2d, 1862. It was severe from the onset, the throat affection being marked by extensive exudation, and by great tumefaction both interiorly and exteriorly. The case continued to present the usual symptoms up to the third week, when the local symptoms gave way, and I supposed that the attack was about to terminate favorably; but the child, instead of improving decisively, continued weak and languid. The circulation became feeble, as marked by general pallor of the skin, a small but not very frequent pulse, growing day by day more and more feeble, and a slowly increasing general debility, without any disturbance of the cerebral or general

nervous system, or of the respiratory or digestive functions. In this case, also, by the method of exclusion, I formed the opinion that the cause of the gradually increasing vital exhaustion lay in the circulation, and that it must be the result of coagulation of blood in the cavities of the heart. The child died on the 25th day from the onset, without any respiratory struggle, without pain, without marked or painful phenomena of any kind, with simply the signs of a slow, but constantly progressive impediment to the circulation.

The treatment consisted, as in the other case, of rest in bed from the first; capsicum gargle internally, and a stimulating embrocation to the outside of the throat; small doses (1-12 gr.) of Kermes mineral with Dover's powder on the first few days, and afterwards doses of iron, and milk punch or wine whey, with animal broth from the onset.

I was assisted at the *autopsy* by Dr. Packard, of this city. The lungs were healthy in all respects, as were also the digestive organs. The pericardium showed nothing abnormal. On opening the heart, we found coagula in the cavities of both sides. These coagula were large, firm, of a dark tint generally, but dotted through with yellowish-white points. They were so firm as to force the conviction that they had been formed for a number of days. In the left ventricle, the coagulum, which filled the cavity of the organ very completely, presented some singular characters. Its lower extremity, that which corresponded to the apex of the ventricle, exhibited a broken, irregular, uneven, and frayed or granulated appearance, so as to suggest at once to our minds the idea of its having been whipped and crumbled away in minute granular portions under the crushing influence of the ventricular contractions. We could not but ask ourselves whether this was not a case of heart-clot in which there was an evident attempt of nature at cure; the mode of cure being a process of slow disintegration of the coagulum from causes acting within the clot, whilst the minute, granular, almost molecular portions thus loosened, were detached by the churning action of the ventricle, and conveyed away to distant portions of the system, there to be arrested, and then finally absorbed under the marvellous selective power of the absorbent system of the body.

This was the only case of the three that I relate, in which conditions of the clot were present, exhibiting the method by which nature strives to remove from the heart the dangerous mechanical impediment to the circulation.

The *third case* occurred in F. L., a girl, aged seven years, of

healthy constitution, of unusual intelligence, and most active in all her habits. She was seized with what, for a few days, left me in doubt whether the attack was to be one of true diphtheria, or merely ordinary tonsillitis, with a slight accidental exudation of false membrane in small dotted points. The general symptoms were very mild at first. In the second week the increase in the amount of the exudation, the considerable tumefaction and soreness of the cervical lymphatic ganglions, the loss of appetite, the continued febrile movement, and the decided, though moderate general weakness, showed very plainly that the case was one of diphtheria. The appetite now flagged very much, deglutition became painful, and the temper grew irritable and peevish, so that it was very difficult to nourish the patient sufficiently. At the end of the third week the throat was better; the exudation, which had never extended beyond the two tonsils and the velum, was diminishing in extent, and the external swelling had almost disappeared. The pulse was between 90 and 100; the skin only at times rather warmer than usual, the muscular strength not greatly reduced, since the child could move freely in her bed, rise up and lie down, and sit up for some length of time to play with her toys. The appetite was poor, but by urgent persuasion the child was made to take a sufficient amount of food daily, in the form of milk punch, wine whey, animal broth, milk toast, tender meat, or some such articles of diet.

At the risk of being tedious, I must state that, though at this time the local symptoms were favorable, and the general condition, as shown by the pulse, respiration, digestion, and the state of the circulation, not positively discouraging, I felt uneasy and anxious about the prospects of my patient. The child made no decided progress towards full recovery. She was listless; the pulse was rather feeble; the surface pallid, and she had a peculiar weary expression of countenance, so that, warned by past experience, I began to fear the existence of, or a tendency to, the same accident I had already witnessed twice before, the formation of cardiac coagulum.

The urine, in its general appearances, had been natural, and was so even now, except that the whole amount was rather less than usual. Upon exposing it to heat, a very moderate amount of albumen in a granular form appeared, and thickened the fluid.

About this time (21st day), the mother left the child's room for a few hours to get some exercise in the open air, and, on returning, was shocked and distressed at the extremely pale,

white, and weary look of the child. So strong was the impression that she declared nothing should induce her to leave the house again until the degree of danger was definitely determined. From this time the patient was not so well. The symptoms were peculiar, and unlike, in many respects, those of any morbid condition that I am in the habit of meeting with. The intelligence and all the senses were perfect in their integrity. The mind was as bright as in the best health, and, except that the temper was rather quick and irritable, and somewhat odd, the emotional nature was healthy. The muscular strength gave way very slowly. The patient could, at all times, move the head and arms freely, and, up to three days before death, could still rise up in bed. In the last few days she complained of weakness in, and difficulty of moving the legs—evidently a state of partial, and only partial paralysis. There was nothing like paralysis of the pharynx; and the voice, after being somewhat husky, had become clear again. The lymphatic swelling had mostly disappeared, and the fauces had almost regained their natural condition. The respiration was perfectly easy, not hurried, and there was no cough, except occasionally a loose laryngeal cough, which had replaced the previous stage of husky voice.

There was no serious dyspnoea, as the child could lie with the head and shoulders low, but the respiration was sometimes suspirious. This latter condition increased during the last two days, and especially during the last twenty hours, so that long-drawn and plaintive sighs were more and more frequently heard, something like those which occur in the early stage of tubercular meningitis, and which told the practised ear that one of the great centres of vitality was seriously deranged. The circulation failed gradually. Each day there was a slight falling off in the power of this great system. The surface grew paler and somewhat ashy, but *not* cyanotic; it had a shrunken look. The face looked thin and anxious, or, rather, weary. The expression was peculiar. It was not what we expect to see in death from embarrassed circulation. There was no lividity, no frightened and staring eye, no pleading look, as in cardiac asthma or orthopnoea, but simply an air of intense weariness and fatigue, like that of one utterly fagged out with a long and hopeless contest with a deadly enemy. This, as well as I can describe it, was the character of the facies in this case, and in the other two which I have watched. In the absence of more specific and positive symptoms of this condition, I take the above mentioned peculiarities of the physiognomical expression to be of considerable importance.

The pulse was feeble and small during the last week of life, these conditions becoming more and more marked as time went on. It was not frequent, running usually from 80 to 100. It was irregular in force, towards the last intermittent, but not very irregular in rhythm. During the last day it was very small, weak, thready, and with considerable intermissions. There was nothing particularly to be noticed about the heart-sounds—indeed, the child was so fretful, when disturbed, that no proper examination was made in the latter part of the attack.

The urine continued moderate in quantity, rather dark in color, without deposit, and with a notable, but not large precipitate of albumen on boiling.

During the last week, I had stated my fear that the cause of the constant declension in the patient's state was the gradual formation of a coagulum in the heart, this being slowly added to and increased in size by daily concretions forming upon its exterior surface. I was assisted during the last week by one of our best practitioners, and during the last two days by a third gentleman, to both of whom I expressed freely my opinion. They regarded the case as a singular one, but were not as well satisfied as myself in regard to the immediate cause of the constantly failing circulation.

As death approached, late in the evening of the 28th day, the general debility became more and more marked, so that the child would ask to be assisted in changing her position. The mind and senses continued quite clear; the respiration, saving its sighing character and occasional suspensions, was not visibly difficult nor labored; the swallowing was not materially affected except from weakness; the pulse became a mere thread, and, for half an hour before death, could scarcely be felt; the extremities became cool and then cold; the child was drowsy and inattentive; there came a longer suspension of the breathing, a slight general convulsion, repeated two or three times within a space of fifteen minutes, and the young life had gone out, under some strange cause of embarrassed circulation, which, for a whole week, had been as tenaciously and as gradually blocking the general circulation as the slow and yet continuous formation of false membrane in the larynx, in true croup, blocks and finally arrests the function of respiration.

The treatment of this case was as follows: The child was confined to a bed or sofa from the start, being allowed to sit up to use her toys, but not permitted to run about the room. For the first few days chlorate of potash, in doses of five grains

every two hours, was administered. After this, one grain of sulphate of quinia in solution with five drops of the tincture of the chloride of iron, were given every three hours, until a few days before death, when the child would no longer take it. She was then ordered a teaspoonful of elixir of cinchona, every two or three hours. When the urine was found to be scanty and albuminous, a mixture of acetate of potash, spirits of juniper, and spirits of nitre was given alternately with the iron and quinia. This soon sickened the stomach, when the spirits of nitre was given alone in water.

Throughout the case the diet was nutritious, consisting of milk-food, with bread and animal broths, and tender meat, when the child would take it. Early in the case brandy was added to the milk, and, as it progressed, the quantity was increased, or it was changed to wine whey, as it was found possible to induce the patient to use them.

The local treatment consisted at first in the use of capsicum infusion as a wash internally, with an embrocation of tincture of cantharides and spirits of turpentine applied externally from time to time. Later in the disease, alum in powder, mixed with sugar, was applied to the fauces.

Autopsy.—Lungs natural, except that they were paler and more crepitant than usual; they exhibited no signs of collapse, and only very slight appearances of congestion at the bases behind.

Pericardium natural; no effusion beyond a few drachms, and no trace of unusual vascularity, or of exudation. The whole size of the heart rather greater than usual, and the right auricle very much larger than the left (four or five times); blackish in color, and much distended. On opening the cavities, no trace of inflammatory action. The right side of the heart presented a firm, dark-colored coagulum, filling up the right auricle, and exhibiting prolongations into both cavæ. These prolongations were dark-colored in their general aspect, but here and there showed oblong points of a yellowish-white color. They were firm enough to retain their shape on handling, and to bear some traction before they broke. The coagulum in the auricle was continued through the tricuspid orifice into the right ventricle, filling up to all appearances, almost completely, the orifice. In the ventricle it occupied a large part of the cavity of that chamber, was adherent closely to the curtains of the tricuspid valve, to the chordæ tendineæ, and to the columnæ carneæ. It was here much lighter in color than in the auricle, being whitish or yellowish-white in its tint, and having also a

much firmer and more solid consistence. In addition to the large coagulum occupying the cavity of the ventricle, there were thin layers of fibrinoid-looking concretions lying in amongst the columnæ carneæ, and resting directly upon the lining membrane of the ventricle. These were adherent with a very considerable force, but could be stripped off. They reminded me, except that they were dark in color from the coloring matter of the blood, of the exudation I have so often peeled off from the laryngeal mucous membrane. A large, firm, and dark-colored cylindrical coagulum extended into the pulmonary artery, and was traced beyond the point where the vessel bifurcates.

The left auricle was small, contracted, and contained only a very small, dark-colored clot. The left ventricle was of natural size, and contained a rather firm, slightly adherent, dark-colored coagulum, which sent a small prolongation into the aorta.

Remarks.—I am well aware that the three cases given above are but imperfectly reported. Any one, however, who has been immersed, body and soul, for a series of years in a large private practice in an American city, will know how to make allowance for such imperfection. Even with these imperfections, I believe them to be important and worthy of publication, since they call the attention of the profession to a mode, if not a direct cause, of death in diphtheria, which thus far has not been, I believe, recognized and described. Certainly the above three cases, occurring in my own practice within a period of four years, show that this accident or condition cannot be very rare. During this period, though I have attended a great many other cases of the disease, most of them of a mild type, I have had only three other fatal cases, and all of these died from the extension of the exudation into the larynx. In neither did I suppose that heart-clot had formed, and in neither was an autopsy made. I have seen, besides these three cases in my own practice, four fatal cases in consultation, all of which died early in the disease with acute malignant symptoms.

A peculiar interest attends such cases as those above described. The patient may or may not have presented alarming symptoms at first, but these have in a great measure disappeared, and the anxiety of the family and physician, as the local and general symptoms subside, may, and indeed must, have greatly lessened, when, suddenly, or very gradually, the case assumes a new aspect. Without any very severe or threatening symptoms, the experienced physician *feels* that some new danger approaches. The sudden arrest in the pro-

gress towards health; the continuance of certain general symptoms, such as weakness and altered temper, in spite of the improvement in the local signs; the pale face and weak pulse, and the air of general and inexplicable lassitude, beget a vague anxiety, which hardly takes shape in time to save the physician, the mortification and distress, and the family the anguish, of a sudden and unexpected catastrophe. I have seen, both in our own and in foreign journals, accounts of cases in which sudden and unexpected death has taken place during an apparent convalescence, in which the death has been supposed to be the result of exhaustion or syncope, or in which no attempt has been made to explain the cause of the sudden fatality. From the character of the symptoms detailed in some of these instances, I have no doubt that they were examples of the kind I have described above.

As to the cause of the coagulations I have described, I have only a few remarks to make. In 1849, my father, Dr. Charles D. Meigs, called attention to the accidental formation of heart-clots in parturient women, as a result of syncopal conditions, occurring in subjects who had already lost blood by hemorrhage during or after labor. He supposes that loss of blood increases the coagulability of what remains in the system, and that the syncopal state, occurring in women who have undergone hemorrhages, invites or conduces coagulation in the heart, through the slow and partially suspended movements of the heart during the existence of the fainting condition. He reports one case (*Obstetrics: the Science and the Art*, 4th ed., Philada., p. 339) in which a heart-clot seems to have formed on the day after the labor, and in which the patient lived to the eighteenth or nineteenth day. At the autopsy "a white, fibrinous coagulum was found in the right auricle, nearly filling it, and projecting through the tricuspid valve into the right ventricle; the tail of the clot was whipped into cords by the threshing action of the chordæ tendineæ of the ventricle. The pleura of the right cavity contained a large quantity of serum." If, however, the syncopal condition is, in truth, in this class of cases, and in others that I have met with, the real exciting cause of coagulation in the cardiac cavities, as I fully believe, this explanation will not apply to the production of coagula in diphtheria.

I shall merely suggest a mode of explanation which has occurred to me. This is that some peculiar change takes place in the constitution of the fluids or tissues, more or less akin to that which gives rise to the exudation of the diphtheric deposit

on the mucous surfaces, which does, in certain instances, by an analogous power or action, induce the formation of coagula upon the interior structures of the cardiac cavities. In the *London Lancet* (vol. II., 1863, Nos. VI. and VII.) are two Croonian Lectures, on the Coagulation of the Blood, by Mr. Lister, in which the writer supposes he has shown that the tissues, when deprived of their vital properties, comport themselves like ordinary solids, and are capable, by a kind of catalytic action, of inducing coagulation of the blood which comes into contact with them. He says:—

“Thus, when an artery or vein is inflamed, coagulation occurs upon its interior in spite of the current of blood, precisely as would take place if it had been artificially deprived of its vital properties.”

If this theory be borne out by further observation, it would be necessary to look with great care, hereafter, to ascertain whether the cardiac coagulum of diphtheria has been preceded, or is accompanied, by the evidence of endocarditis. In the cases reported above, I did not find any of the usual appearances of endocarditis.

Can they be prevented? Entirely ignorant as we are in regard to the particular variety of the disease, in which we should anticipate their formation, we can have no better rule of treatment than to act in such a way as to get rid of the disease as rapidly and thoroughly as possible; or, in other words, to make assiduous use in all cases, mild and severe, from the very outset of the malady, of the remedies and various hygienic measures which observation and experience have shown to be most powerful in combating this dangerous blood disease.

Does the patient ever recover after a coagulum has formed in the heart? I am disposed myself to hope that, in some rare instances, and under very favorable circumstances, nature may be able to rescue the patient from even the abyss of danger. There is no doubt that subjects recover after the formation of thrombi in the vessels, and I believe it is generally acknowledged that some instances of recovery have taken place after the discharge of emboli through the great vessels of the heart, these emboli having been either carried through the heart from some point in the venous system where they had been formed, or having been formed originally in the cavities of the heart. M. Virchow supposes that the coagula or thrombi formed in the vessels undergo a softening process from the centre outwards, which reduces them to a puriform substance, “a puriform but not a purulent substance” (*Cellular Pathology*, Am. ed., p.

34). He does not describe any such softening process in coagola located in the heart, but infers that such disintegration may take place in large fragments of thrombi lodged in arteries. Referring to thrombi carried through the right side of the heart, he says, page 241:—

“I believe, namely, that when a considerable fragment of a thrombus becomes wedged at a certain point in an artery, it may in its turn crumble away through the onward pressure of the blood, and thus the minute particles to which this crumbling of the larger plug gives rise be conveyed into the small branches into which the vessel breaks up. Thus alone does it seem to me that the fact can be explained, that in the district supplied by an artery of considerable size a number of little deposits of the same sort are often found.”

In one of the cases reported by me, the second, an effort was clearly being made by nature to break up and wash out from the left ventricle the clot which had there formed. Whether such an effort can ever be successful, is the question now under consideration. It cannot be answered with certainty. To know that the effort was being made, is at least some encouragement. Any one who will read the description given above, from M. Virchow, of the conditions observed by him in large fragments of thrombi carried into the larger branches of the pulmonary artery, cannot fail to see how closely they resemble those observed by myself in the case just referred to. I may mention that this case was observed before the publication of M. Virchow's work in this country, and that I could not, therefore, have been led to look for the changes described by the expectation aroused by the perusal of M. Virchow's facts and opinions.

Whether the metastatic inflammations and suppurations which M. Virchow seems to suppose always ensue, as a consequence of the conveyance of the particles or fragments of the disintegrated thrombus or clot into the vessels beyond the point of formation of that thrombus or clot, must necessarily follow, is a question which I do not believe is yet positively determined. I think it may fairly be questioned whether the arrested fragments or molecules of the disintegrated coagulum, or thrombus, may not be absorbed, after undergoing some preparatory transformation like the fatty degeneration of inspissated pus, described by M. Virchow, without the invariable and necessary inflammatory changes supposed to constitute the basis of the metastatic conditions.

Several years ago I saw a case in consultation which, at the

time, was extremely puzzling to me. It was that of a boy six years old, remarkably stout in build, hardy in constitution, and born of parents, on both sides, of the most vigorous and robust health. He had that characteristic which is so important in severe illness, toughness, tenacity of life, which makes the resurrections occasionally met with by all medical men in the course of a long experience. This boy had had a severe attack of scarlet fever, and had passed safely through the eruptive stage. During the desquamation he was attacked with albuminuria, and, when I saw him, he was passing a very scanty amount of urine per day, which was highly charged with albumen, and which the microscope showed to contain blood-globules, very numerous and large fibrinous tube-casts, and much exfoliated epithelium. He had extensive anasarca, was much exhausted, and continued very ill for many weeks. He became emaciated, very pallid; and, after the dropsy had disappeared, and the urine had greatly improved in quantity and quality, had the following curious train of symptoms. He was very feeble, so that he made no attempt to leave the bed, but he had no cerebral disorder, no material disturbance of the respiratory organs, and was always able to take his stimulants and nutrients, which were administered in large quantities, and which, with iron, constituted the essential treatment. His liver, however, became enormously enlarged, so that it extended down somewhat below the umbilicus, and then around to the crista of the right ilium. It was not painful to the touch, nor did he complain of any spontaneous pain in that region. At this time the heart-sounds had the same curious characters that were noted in the first case described above; they were indistinct, and gave at the same time the impression that they were reduplicated. The impulse was distinct, but feeble. The child continued for many weeks in this state, exhausted, emaciated, prostrate, and then began very slowly to mend; and finally, after having been in the very jaws of death, recovered entirely. Since meeting with the cases detailed in this paper, I have thought it not unlikely that the boy just alluded to may have had, and may have survived a heart-clot. His health was something quite unusual, both in fact, and by the law of descent, and I do not know that a recovery from a heart-clot, by the process above hinted at, would be more extraordinary than one from a wound, with loss of brain substance, caused by the passage of a tamping-rod through the anterior portion of the cerebrum, or that of the Count d'Aumale, described by Paré, who recovered after a spear had been driven from front to rear, through the upper regions of the brain.

OXYGENNESIS FOR THE INSTANTANEOUS PRODUCTION OF PURE OXYGEN WITHOUT HEAT.

By MR. J. ROBBINS.

From the time of the discovery of oxygen to the present, perhaps no subject has so much engaged the attention of chemists as the production of it at a cost sufficiently low to be employed in the arts, for the reduction of metals and other operations requiring a high temperature, and also for the purposes of illumination, the light obtained by it vying in splendor with the sun's rays. This desirable object has yet to be accomplished, and may be regarded as a prize to be won by some future happy discoverer. It seems surprising, since Nature has provided us so bountifully with this substance, and presented it in such a variety of combinations, that, up to the present time, there should be no known method of separating, except at such a cost which excludes it for the purposes just enumerated.

In Gmelin's "Chemistry" six processes are given for the production of oxygen:—

1st. By heating chlorate of potash to low redness. As this process is slow and tedious, a small quantity of oxide manganese is usually mixed with the salt, which greatly facilitates the decomposition, and the evolution of gas is both rapid and abundant. According to the authority just named, manganese is often mixed with carbonaceous matter, which passes over as carbonic acid, but another impurity I may mention is the presence of chlorine, which, I believe, may always be detected when oxygen is obtained by this method.

2d. By ignition of red oxide of mercury. The presence of hyponitric acid may be feared in oxygen so obtained.

3d. By strong ignition of oxide of manganese.

4th. By heating manganese with an equal weight of oil of vitriol.

5th. By ignition of nitrate of potash. This salt, when heated above its melting point, is converted by the loss of two equivalents of oxygen into nitrite of potash; on a further increase of temperature both nitrogen and oxygen pass off, consequently the product is always contaminated with nitrogen, which increases as the action proceeds.

6th. By the action of sulphuric acid on bichromate of potash. Three parts bichromate potash and four parts sulphuric acid are heated together in a capacious retort. An evolution of oxygen

gas easy to regulate is the result. In this experiment we might congratulate ourselves if the process is conducted to the end without a fracture of the retort.

Of the six processes just described, two only are now used, viz.: chlorate of potash with or without manganese, and manganese alone. More recently other processes have been recommended, one of which, by heating together nitrate of soda and oxide of zinc, has been patented. From this mixture oxygen is said to be produced at a cheaper rate than by any other method at present known. Unfortunately for the value of this discovery, the product is contaminated with a considerable percentage of nitrogen. M. Kuhlman, of Lille, discovered and published an ingenious and beautiful process for the production of oxygen by means of baryta. He found that by passing a current of common air through caustic baryta heated to dull redness, peroxide of barium was formed, which, on an increase of temperature, is resolved into oxygen gas and caustic baryta; the latter ready again to perform its part in a similar operation. The idea naturally suggested itself that the means were now at hand for getting oxygen from the atmosphere in any quantity at a small cost. This method, although so promising, has been for the present abandoned; it was found that, after a few operations, either from a molecular change, or from the silica or other impurities, a sort of glass or fusion resulted on the surface, the baryta then refusing to act again.

We now come to the consideration of the new method for the generation of oxygen recently introduced by myself. The process or the compound employed in it has been named *oxygennesis*. It will have doubtless been observed by you that, in all the processes hitherto known, a high temperature is necessary, and until that point is reached, no product whatever is obtained; this fact we may consider as the chief difficulty experienced in the preparation of oxygen, and more especially so when sulphuric acid is used. If, for example, by the mere addition of sulphuric acid to bichromate of potash in the cold, we could get the same results which are obtained by the application of heat, this process, instead of being thrust in the rear, would have taken front rank.

Oxygennesis, therefore, stands alone as a novel and the only mode we possess for producing oxygen without the application of heat. The mode of using this compound is extremely simple. We have only to take some of this powder, place it in a glass flask or bottle provided with an exit tube, pour on any of the dilute mineral acids, and we have immediately oxygen evolved

in a similar way, and with as much facility as hydrogen is obtained from zinc or carbonic acid from a carbonate.

The composition of this compound is extremely simple, merely peroxide of barium, and bichromate potash. Not so the chemical changes resulting from an addition of an acid. Peroxide of barium, on addition of sulphuric acid, is resolved into sulphate of baryta and peroxide of hydrogen, and it is from this sometimes so-called oxygenated water we get this curious and interesting chemical reaction. Whenever peroxide of hydrogen and chromic acid are brought into contact with each other, instantaneous decomposition is the result, the chromic acid is reduced to sesquioxide of chromium, and the peroxide of hydrogen to water; at the same time pure oxygen derived from both those substances is disengaged. The theory of this very interesting reaction is not, I believe, well understood, and I know only one way of explaining it, that is, on the ozone and antiozone theory of Brodie. According to that theory, oxygen exists in three different states or conditions, viz.: ozone, antiozone, and ordinary oxygen, and whenever ozone and antiozone (which may both be considered more or less active) are brought together, they unite and neutralize each other, as it were forming passive or common oxygen.

To return to the composition of the powder, we are not compelled to use precisely those ingredients mentioned, but may substitute analogous compounds. Peroxide of barium might be replaced by any other peroxide capable of forming binoxide of hydrogen, of which there are several—peroxides potassium, sodium, strontium, and calcium—but all these at the present time are practically useless, peroxide of barium being the only one that can be easily and cheaply prepared. Bichromate of potash may be substituted by manganate or permanganate of potash, binoxide of manganese or binoxide of lead; the cost of the two first-mentioned forbids their present use, and the one selected is by far preferable to the others. With regard to the acids, either of the mineral class will do, but I prefer a mixture of dilute sulphuric and hydrochloric acids.

The next question demanding our notice is, in a commercial point of view, a most important one; however much this method may be admired for its simplicity, and the ease with which the operation may be conducted, its ultimate success or failure must depend on its cost. Can the oxygenesis, therefore, be manufactured and sold at a price sufficiently low to make it an article of commerce? I believe it can be, and be made available for all purposes wherever oxygen is required to the extent of some

gallons. One of the ingredients of this compound, peroxide of barium, has never yet been produced and sold as a commercial article, and from the trouble of making a small quantity, but few even practical chemists care to prepare it for themselves. It can hardly, therefore, be expected that a compound of this nature can at once be manufactured and sold at a price it must ultimately be reduced to, if extensively used and produced in quantity. 5s. per pound, the price hitherto charged, would, I admit, be a barrier to its general adoption; but I am happy to say we have now made the necessary arrangements to lessen the cost of production, and have at the same time reduced the price.

Some of the baryta compounds are found abundantly in nature, and are of but small value in the market, but up to the present time but few uses have been made of them; they now promise a much more extensive application. Mr. Kuhlman has, perhaps, done more than any one else to develop their uses and value in the arts, and in the *Chemical News*, November 28, 1863, will be found some interesting extracts relating to them from Dr. Hofmann's report on chemical products and processes of the International Exhibition.

I shall trespass a little farther on your time to make a few remarks on one of the various applications of oxygen, which may be of some interest to the medical profession and to pharmaceutical chemists. I mean the employment of that body as a therapeutic agent by inhalation. For that purpose this ready method for producing the gas promises to be of great value. Towards the end of the last and the beginning of the present century, vital air, as oxygen was often and not inappropriately called, was used largely in this country and on the continent. In this country we find the names of Drs. Beddoes, Hill, Thornton, and other physicians. Dr. Hill used it for more than 25 years, and Dr. Thornton was quite eminent for his successful application of it. At the present time, the desire by medical men for the administration of oxygen has revived both here and abroad. Two papers have recently been read, to be followed by others on the same subject, before the Academy of Sciences at Paris, by Messrs Demarquay and Leconte. The experiments and observations of those gentlemen appear to have been very numerous and carefully made both on animals and on man, in disease and in health, and the conclusion they arrive at is, that oxygen is a valuable curative agent. If so good, then, as a remedy when its value was once known, what caused it to become and continue so long neglected? The explanation is, I think,

not difficult. In the first place, when this body was discovered, too much was expected from it. The first *furor* for its employment arose from the simple experiment which showed its power of rekindling an expiring match, and as oxygen is the essential element of our existence, it was supposed it might, in a similar way, rekindle the expiring vital spark. The more imaginative were elated at what they considered a discovery, so long dreamt of and so earnestly sought after by the alchemist. But oxygen is not the elixir vitæ. It will not restore grey hair to its original color, nor make an old man young. The difficulties and expense attending its administration may also be considered other reasons for its non-employment. Of what use was it for a medical man to order that which the patient could not get supplied? A physician, therefore, having faith in the remedy, was compelled to lay himself out especially for it, become an oxygen doctor, and prepare and administer the remedy himself. These difficulties now no longer exist.

We have on the table an oxygen inhaler and generator, made according to the suggestions of Dr. Richardson. The generation of the gas is by this method so easy and so simple that patients can prepare their own dose, or, if need be, the nurse after one lesson can as well undertake the operation as any other duty she may be required to perform.

Physicians who may wish to employ this remedy may now prescribe it with no more hesitation than they would prescribe a black draught or a calomel pill.

Dr. Squire wished to enquire whether Mr. Robbins' invention had not been patented; if so, he doubted the value of the patent, for Prof. Brodie had pointed out in 1851, that when peroxide of barium was treated with an acid solution of bichromate of potash oxygen was evolved with great regularity. Faraday had mentioned the same thing in one of his lectures on ozone at the Royal Institution. Dr. Squire also objected to the name oxygenesis, and thought it ought rather to be called oxyexodus, as the oxygen was eliminated, not created.

Mr. C. H. Wood said that the reactions of peroxide of barium and bichromate or permanganate of potash were well known as scientific facts, but did not consider that that effected the value of Mr. Robbins' patent. The great objection to Mr. Robbins' process was the cost of the oxygen, and he was glad to hear that this was likely to be reduced. He did not consider that the process was easier than that for obtaining oxygen from chlorate of potash and manganese; indeed, he thought the latter the easier operation. He wished to know how Mr. Robbins decided

that oxygen from chlorate of potash and manganese was contaminated with chlorine and not by ozone. The late Mr. Witt had shown that oxygen obtained in this way always contained a variable proportion of ozone. He (Mr. Wood) did not consider ozone objectionable for inhalation, for he thought that whatever good was effected by oxygen, when inhaled, must be due to the ozone which gave active properties to oxygen.

Prof. Redwood said that Mr. Grace Calvert had pointed out that oxygen from chlorate of potash and peroxide of manganese always contained chlorine or an oxide of it, and he did not think that the gas from this source was fit to administer. He freely gave his testimony to the value of the process Mr. Robbins had introduced. The process was certainly easy, though it was not calculated for chemists, but would answer well when oxygen was wanted for medical purposes.

Mr. Robbins, in reply, said that he was not aware of Mr. Brodie's experiments, and had not heard of them, although he had spoken to many chemists on the subject. He considered it a great boon to be able to get oxygen by a cold process, and at all events, still considered the application new. Authorities differed as to the value of oxygen as a curative agent, but the most recent experiments of Demarquay and Leconte seemed to prove that it possessed great remedial power. Under these circumstances, it was well to have a means of procuring oxygen as easily as making a cup of tea. With regard to Mr. Wood's doubt about the presence of ozone instead of chlorine, he might say that, in conjunction with Mr. Brown, now of the War Department, he had examined many specimens of oxygen obtained from the chlorate and manganese for ozone, but in all cases found chlorine instead. In his (Mr. Robbins') process the oxygen was well washed.

Mr. Wood said that washing would not remove ozone.

Mr. Robbins replied that Faraday had showed that ozone could be removed by washing, and he himself had found ozone made by means of phosphorus in the ordinary way disappear after shaking with water well for an hour.

The Chairman said he considered Mr. Robbins' an elegant way of procuring oxygen for medical purposes, which had the recommendation of cheapness when the oxygen was considered as medicine.—*Chemical News, London, March 12, 1864, from Trans. Lond. Pharm. Society.*

Proceedings of Societies.

PROCEEDINGS OF THE TWELFTH ANNUAL MEETING, FOURTEENTH ANNIVERSARY, OF THE ILLINOIS STATE MEDICAL SOCIETY.

HELD IN CHICAGO, MAY THIRD, FOURTH, & FIFTH, 1864.

The Fourteenth Anniversary Meeting of the Illinois State Medical Society, assembled in the Common Council Room, in the City of Chicago, on the morning of May 3d, 1864. In the absence of the President, Dr. A. H. Luce, of Bloomington, first Vice-President, took the Chair and called the Society to order at 10½ o'clock A.M.

Dr. M. O. Heydock, of Chicago, Chairman of the Committee of Arrangements, welcomed the members of the Society to the hospitalities of the city, in a brief and very appropriate address, and reported the following list of permanent members and delegates as present, viz.:—

Dr. H. Noble, of Heyworth, McLean Co., Ill.

- | | | |
|--|------|---|
| " A. H. Luce, of Bloomington, | " | " |
| " J. S. Whitmire, of Metamora, Woodford Co., | Ill. | |
| " David Prince, of Jacksonville, Morgan Co., | " | |
| " L. T. Hewins, of Loda, Iroquois Co., | " | |
| " M. O. Heydock, of Chicago, Cook Co., | " | |
| " E. L. Holmes, | " | " |
| " W. H. Byford, | " | " |
| " N. S. Davis, | " | " |
| " Gerhard Paoli, | " | " |
| " R. E. McVey, of Waverly, Sangamon Co., | " | |
| " S. Wickersham, of Chicago, Cook Co., | " | |
| " E. Andrews, | " | " |
| " J. H. Hollister, | " | " |
| " Ira Hatch, | " | " |
| " DeLaskie Miller, | " | " |
| " John Bartlett, | " | " |

" Thomas Bevan,	"	"	"
" R. N. Isham,	"	"	"
" J. M. Steele, of Grandview, Edgar Co.,			"
" E. Ingalls, of Chicago, Cook Co.,			"
" D. W. Young, of Aurora, Kane Co.,			"
" Chas. G. Smith, of Chicago, Cook Co.,			"
" Alex. Fisher,	"	"	"
" J. Adams Allen,	"	"	"
" D. E. Ellis, of Belvidere, Boone Co.,			"
" Noble Holton, of Buda, Bureau Co.,			"
" John Woodworth, of Aurora, Kane Co.,			"
" N. P. Peterson, of Chicago, Cook Co.,			"
" J. W. Freer,	"	"	"
" V. L. Hurlbut,	"	"	"
" J. P. Ross,	"	"	"
" J. S. Jewell,	"	"	"

The Secretary then called the full roll of members; and, on motion, the reading of the minutes of the last Annual Meeting was dispensed with.

The election of permanent members being in order, the following were duly proposed and elected, as new members:—

Drs. R. C. Hamill, of Chicago; A. Groesbeck, of Chicago; Henry M. Lyman, of Chicago; James Miner, of Waverly; Noble Holton, of Buda; L. F. Warner, of Chicago; E. P. Cook, of Mendota; J. P. Ross, of Chicago; H. Wing, of Chicago; J. H. Foster, of Libertyville; J. H. Hagerty, of Dwight; F. N. Burdick, of Elgin; Joseph Tefft, of Elgin; S. C. Blake, of Chicago; J. S. Jewell, of Chicago; James H. O'Reilly, Chicago; W. R. Fox, of Wilmington; M. J. Johnson, of Wilmington; G. B. Lester, Bristol; F. A. Emmons, of Aurora.

On motion of Dr. J. H. Hollister, a committee of one from each county represented, was appointed to nominate officers and Standing Committees for the ensuing year.

The following were announced as such Committee:—

H. Noble, of McLean Co.
 R. E. McVey, of Morgan Co.
 R. C. Hamill, of Cook "

J. M. Steele, of Edgar " "
 J. S. Whitmire, of Woodford Co. "
 L. T. Hewins, of Iroquois " "
 D. W. Young, of Kane " "
 E. P. Cook, of Lasalle " "

On motion of Dr. S. Wickersham, Surgeon S. H. Holden, U.S.A. and Medical Director for Chicago, and Surgeon J. H. Grove, U.S.A., Superintendent of General Hospitals of Chicago, were elected members by invitation.

On motion of Dr. E. L. Holmes, W. H. Baxter, of Moscow, Iowa, was elected a member by invitation.

Dr. M. O. Heydock, Chairman of the Committee of Arrangements, presented invitations from the faculty of the Chicago Medical College; the Rush Medical College; the Marine and Mercy Hospitals; and from the Surgeons of the Military Hospitals in Camp Douglas, to visit each of those institutions and recommended that the several invitations be accepted, and that a part of the afternoon of Wednesday be devoted to the visiting of Rush Medical College and the Marine Hospital; and the whole of the afternoon of Thursday to the visiting of the Chicago Medical College, and the Mercy and Military Hospitals.

On motion, the recommendations of the Committee were unanimously adopted.

An invitation was received from Dr. N. S. Davis, requesting the members of the State Medical Society to meet those of the Chicago City Medical Society in a social entertainment at his residence on Wednesday evening, which was accepted. The Treasurer, Dr. J. H. Hollister, of Chicago, submitted the following report, which was accepted and approved:—

J. H. HOLLISTER, *Treasurer,*

In ac't with ILL. STATE MED. SOCIETY,
Dr.

1683.

May 7.—To Cash received from new members at Jacksonville, May 7th, 1863, for Initiation,	\$22 00
Cash of the same—dues for 1863 - - -	20 00
Cash received from old members—dues 1863,	28 00
	<hr/>
	\$70 00

1863.

Cr.

May 12.—By amount paid Wm. Craven, Printer—

Balance of Bill for Transactions, 1860, - - \$69 50

\$00 50

Amount due G. H. Fergus, Printer, for publishing the Transactions for 1863, for which

the Society is now indebted, - - - - - 56 05

Respectfully submitted.

J. H. HOLLISTER, *Treas.*

Dr. D. W. Young, of Aurora, moved that the annual assessment for the present year be three dollars, which motion, after some discussion, was adopted.

The Permanent Secretary, Dr. N. S. DAVIS, submitted the following annual report:—

REPORT OF THE COMMITTEE OF PUBLICATION AND SECRETARY
FOR 1864.

Within sixty days after the adjournment of the last Annual Meeting, the undersigned notified, by letter, all the Committees appointed at that meeting.

As the cash receipts of the last year were no more than sufficient to pay the previous indebtedness of the Treasury, leaving nothing to pay for the Transactions of the past year, the Secretary had no alternative but to forego the publication of the Transactions altogether, or pursue the same course as in previous years, namely, first publish the reports and papers in the MEDICAL EXAMINER, and thereby avoid all the expense of type-setting—leaving the tax upon the Treasury of the Society to consist only of paper and press-work.

The Publishing Committee chose the latter course, and published 300 copies of the Transactions of the Meeting at Jacksonville, at a cost of \$68. Fifty copies were taken by Dr. Prince, of Jacksonville, and paid for, *pro rata*, as the cost of publication, leaving a balance of \$56.05. Copies of the Transactions have been mailed to all the members who had paid the annual assessment for the year—leaving about 200 copies now on hand—about 30 of which have been laid on the table in this room for the use of members.

In behalf of the Committee of Publication.

N. S. DAVIS,
Per. Secretary.

On motion of Dr. DeLaskie Miller, the report was accepted and the thanks of the Society tendered to the Secretary for his liberality in procuring the publication of the transactions.

Reports of Standing Committees being called for, the Chairmen of several announced their possession of reports; and, after fixing the time for hearing the same, the Society adjourned to 2 o'clock P.M.

AFTERNOON SESSION.

At 2 o'clock P.M., the Society was called to order, Dr. A. H. Luce, Vice-President, in the chair.

Dr. H. Noble, Chairman of Committee on Nominations, reported as follows:—

For President.—A. H. LUCE, M.D., of Bloomington.

Vice-Presidents.—J. M. STEELE, M.D., of Grandview; THOMAS BEVAN, M.D., of Chicago.

Assistant-Secretary.—C. R. PARKE, M.D., of Bloomington.

Treasurer.—J. H. HOLLISTER, M.D., of Chicago.

Committee of Arrangements.—T. F. WORRELL, M.D., of Bloomington; S. W. NOBLE, M.D., of LeRoy; T. P. ROGERS, M.D., of Bloomington.

Committee on Practical Medicine.—J. ADAMS ALLEN, M.D., of Chicago; C. GOODBRAKE, M.D., of Clinton; H. NOBLE, M.D., of Heyworth.

Committee on Drugs and Medicines.—JOHN BARTLETT, M.D., of Chicago; F. R. PAYNE, M.D., of Marshall; T. D. FITCH, M.D., of Kewanee.

Committee on Obstetrics.—WM. H. BYFORD, M.D., of Chicago; LUCIUS CLARK, M.D., of Rockford; S. T. TROWBRIDGE, M.D., of Decatur.

Committee on Surgery.—D. W. Young, M.D., of Aurora; A. L. McARTHUR, M.D., of Joliet; L. T. HEWINS, M.D., of Oakalla.

Special Committee on Ophthalmology.—E. L. HOLMES, M.D., of Chicago; R. E. McVEY, M.D., of Waverly; J. S. WHIT-

MIRE, M.D., of Metamora; F. B. HALLER, M.D., of Vandalia.
Special Committee on Spotted Fever.—J. S. JEWELL, M.D., of Chicago.

Special Committee on Orthopædic-Surgery.—DAVID PRINCE, M.D., of Jacksonville.

Bloomington was recommended as the place for holding the next Annual Meeting of the Society.

On motion, the report of the committee was accepted; and the officers and committees nominated therein, unanimously elected. The President elect returned thanks to the Society for the honor conferred.

Letters from absent members being in order, the Secretary read a letter from the retiring President, Dr. A. McFarland, Superintendent of Hospital for Insane at Jacksonville, expressing his warm attachment to the Society, and his regret at not being able to attend the meeting on account of the sickness of his only Assistant in the Hospital.

On motion of Dr. J. A. Allen, Dr. McFarland was requested to furnish a copy of his Annual Address to the Publishing Committee for publication in the Transactions of the Society.

The Secretary also read a letter from Prof. H. A. Johnson, of Chicago, regretting his inability to attend the meetings of the Society on account of severe illness.

The reading of volunteer papers being in order, Dr. R. E. McVey, of Waverly, read an interesting communication on cerebro-spinal meningitis or spotted fever, as it had prevailed in the circle of his own practice.

Dr. J. Adams Allen, of Chicago, also read a very interesting paper on the same subject, referring to a severe epidemic of the disease, which came under his observation in 1848-9.

These communications were listened to with much interest; and, after a brief discussion by Drs. Hollister, Andrews, Whitmire, and Allen, the authors were requested to furnish copies of their respective papers to the Committee of Publication.

Dr. E. Andrews, of Chicago, Chairman of the Standing Committee on Surgery for the past year, read an abstract of his report, which was accepted and a full copy of the report referred to the Committee of Publication.

Dr. E. L. Holmes, of Chicago, read an abstract of his report as Special Committee on diseases of the eye. On motion of Dr. J. S. Whitmire, the report was accepted and referred to the Committee of Publication.

Dr. E. Andrews, of Chicago, Chairman of the Auditing Committee appointed at the last Annual Meeting, made the following report, which was adopted, viz.:—

"The Committee to which was referred the Annual Report of the Treasurer, Dr. J. W. Freer, beg leave to report that they have investigated the same, and found it to be correct, and recommend its approval.

E. ANDREWS,
Chairman of Com."

Dr. N. S. DAVIS offered the following resolution, which was adopted, viz:—

Resolved, That all reports of committees and volunteer communications, referred to the Committee of Publication, must be complete and delivered to the Permanent Secretary before the first of July next succeeding the meeting at which they were read.

On motion, the Society adjourned to 9½ o'clock in the morning.

MAY FOURTH—SECOND DAY.

Wednesday morning, 9½ o'clock, the Society was called to order,—Dr. A. H. Luce, President, in the chair.

The Secretary read the minutes of yesterday, which were approved. The Society also read a communication from Dr. F. K. Bailey, formerly of Joliet, but now in the U. S. General Hospital at Quincy, regretting his inability either to attend the meeting or send a report from the Committee on Drugs and Medicines.

Dr. J. M. Steele moved that the Secretary be appointed a Committee to present suitable resolutions in relation to the death of the late Dr. S. York, of Paris, Edgar Co. The motion was seconded and adopted.

The hearing of reports of Standing Committees being resumed, Dr. DeLaskie Miller, of Chicago, read the report of the

Standing Committee on Obstetrics and Diseases of Females. The report elicited an interesting discussion, which was participated in by Drs. Heydock, Prince, Steele, Bartlett, Whitmire, Andrews, and Hamill.

On motion of Dr. Prince, the report was accepted and referred to the Committee of Publication.

Dr. Bartlett offered the following resolution, which was seconded and adopted, viz.:—

Resolved, That the Chairman of the late Committee on Obstetrics (Dr. DeLaskie Miller, of Chicago) be appointed a Special Committee to consider the question of the influence of the mind of the mother upon her offspring; and also to inquire whether the husband of a pregnant woman ever experiences morning sickness in her stead.

On motion, Dr. W. H. Byford, of Chicago, was appointed a Standing Committee on Necrology.

Dr. D. Prince, of Jacksonville, presented a pretty full verbal abstract of his report on Orthopædic Surgery, accompanied by many interesting illustrations.

Before completing his remarks, the hour arrived for adjournment. Dr. Heydock, from the Committee of Arrangements, reported the names of additional members. Adjourned to 2 o'clock P.M.

AFTERNOON SESSION.

Society was called to order at 2 o'clock P.M.,—the President in the chair.

Dr. Prince resumed and completed his report, which was accepted and referred to the Committee of Publication.

At 3½ o'clock P.M., the Society adjourned until 9½ o'clock the following morning, to enable the members to visit Rush Medical College and the Marine Hospital.

THURSDAY, MAY FIFTH—THIRD DAY.

The Society was called to order at 9½ o'clock, A.M.,—the President in the chair.

Secretary read the minutes of the proceedings of yesterday, which were approved.

Dr. J. Bartlett read a letter from Dr. McGugin, of Iowa, on

the subject of the fees of medical witnesses, and offered the following resolutions, which were adopted:—

Resolved, That a committee of three be appointed by the Chair, to consider in what respects the pecuniary interests of the medical profession suffer from unfavorable or deficient legislation.

Resolved, also, That this committee be authorized to petition the State Legislature, in behalf of this Society, for such legislation as they may deem necessary and proper.

Dr. N. S. DAVIS reported the following resolutions in relation to the death of Dr. S. York, which were unanimously adopted:

Whereas, Dr. S. York, of Paris, Edgar Co., Ill., an honored and highly esteemed member of this Society, has been recently stricken down, while in the service of his country, by the hand of lawless violence; therefore,

Resolved, That by his death, this Society has lost one of its most faithful, active, and honored members; the community where he lived, one of its most skilful physicians; and the country, one of its most patriotic citizens.

Resolved, That we deeply sympathize with his afflicted family and friends in this hour of their bereavement.

Resolved, That the Secretary be directed to forward a copy of the foregoing resolutions to the family of the deceased.

The President appointed the following committee to act on the subject of Dr. Bartlett's resolutions, and report at the next Annual Meeting, viz.:—Drs. John Bartlett, of Chicago; A. McFarland, of Jacksonville; and H. Wing, of Chicago.

Dr. D. W. Young offered the following resolutions, which were adopted, viz.:—

Resolved, That the present pay and rank of surgeons and assistant-surgeons in the army is inadequate to compensate them for the services required of and performed by them.

Resolved, That the members of this Association ought to make every possible exertion, through the National Medical Association, and our senators and representatives in Congress, to have our medical brethren in the field receive at least a reasonable compensation for their services and sacrifices while

they are braving the dangers of the camp and caring for the soldiers of our country.

Dr. H. Wing offered the following resolutions, which were referred to the committee appointed under the resolutions of Dr. Bartlett:—

Resolved, That the Profession is the proper judge of the qualifications of its members.

That the interests of the Profession would be promoted by having new members admitted on the judgment of the Profession itself; and, therefore,

That the committee appointed under resolution, to memorialize the State Legislature, be also instructed to ask that this Society be authorized by law to grant certificates of qualification, on proper examination, to undergraduates.

Dr. N. S. DAVIS, Chairman of Committee on Practical Medicine, read a somewhat lengthy report, which was accepted and referred to the Committee of Publication.

Dr. J. Woodworth offered the following, which was unanimously adopted:—

MR. PRESIDENT:—As the hour for adjournment of this Society has arrived, and this is the last opportunity which will present itself wherein we can as a body recognize the courtesy extended to us by individual members of the profession during its session; I would therefore move that the thanks of this Society be expressed to the Common Council, the Faculty of the Rush Medical College, the Faculty of the Medical Department of the Lind University, the Physician in charge of the Mercy Hospital, and especially to Drs. R. N. Isham and A. R. Terry, of the U. S. Marine Hospital; Dr. J. H. Grove, U.S.A. Superintendent of Hospitals; Dr. Holden, U.S.A. Medical Director; and Dr. N. S. Davis, of Chicago, for those courtesies which have done so much to render this meeting one of interest, pleasure, and profit.

On motion, the following members were elected delegates to the American Medical Association for the ensuing year:—

Dr. N. WRIGHT, of Chatham.

“ D. PRINCE, of Jacksonville.

- " R. E. McVEY, of Waverly.
- " H. NOBLE, of Heyworth.
- " N. S. DAVIS, of Chicago.
- " D. W. YOUNG, of Aurora.
- " J. M. STEELE, of Grandview.
- " J. WOODWORTH, of Aurora.
- " J. BARTLETT, of Chicago.
- " J. S. JEWELL, of Chicago.
- " L. CLARK, of Rockford.
- " R. C. HAMILL, of Chicago.
- " N. HOLTON, of Buda.
- " A. L. McARTHUR, of Joliet.
- " E. P. COOK, of Mendota.
- " T. D. FITCH, of Kewanee.
- " S. W. NOBLE, of LeRoy.
- " C. GOODBRAKE, of Clinton.

At 12½ o'clock, the Society adjourned for the year—it being understood that the afternoon should be occupied in visiting the Chicago Medical College, Mercy Hospital, and the Military Hospitals in Camp Douglas.

N. S. DAVIS, *Per. Secretary.*

H. W. JONES, *Assist.* "

Editorial.

ILLINOIS STATE MEDICAL SOCIETY.—The recent Annual Meeting of the Illinois State Medical Society in this city was well attended, and afforded a season of more than usual interest. A larger number of interesting papers and reports were read than at any former meeting for several years.

All the proceedings and discussions were harmonious and cordial; the visits to the Medical Colleges and Hospitals interesting and profitable; and the social union of the members of the State Society with those of the Chicago City Society, at the residence of the Permanent Secretary, on Wednesday even-

ing, was an occasion of high social enjoyment. We give, in another part of the EXAMINER, a full record of the proceedings, and also the first half of the report of the Committee on Practical Medicine. We publish this part of the report thus early on account of the general interest felt in the subject of Cerebro-Spinal Meningitis or Spotted Fever.

Other papers in relation to the same subject will be published in the next number of the EXAMINER; while the remaining part of the report, relating to the improvements in Practical Medicine, will be deferred to the August number.

THE following interesting and important communication was received too late for insertion in the proper place under the head of original articles:—

CLEFT PALATE, CONGENITAL AND OTHERWISE.
THEIR REMEDIES.

Having recently spent some time in examining cases of palatine fissure, and the various means adopted for their treatment in Europe, I would add my testimony in view of the opportunities which I have enjoyed, to that which may soon appear upon the same subject, in favor of an appliance invented by Dr. N. W. KINGSLEY, of New York City.

It has been successfully tested in a number of cases, for about four years, and may, therefore, be safely regarded as considerably in advance of those fixtures heretofore adopted to remedy this most disagreeable defect. While in Europe, I sought out and examined many of the patients who had been operated upon for fissure, particularly those for whom artificial "obturators" had been made; conversed with them while their obturators were in place; and then caused their removal in order that I might judge of the amount of benefit that had been derived from them. I found, however, in no one of these cases an apparatus that exactly accomplished the desired object.

Without going into the history of these cases, or their treatment; so far as I have been able to ascertain, no operation for fissure, whether surgical or consisting of a mechanical appliance, has until now been more than partially successful; and many

cases, now amenable to treatment, have been regarded as entirely remediless.

Before giving a description of the appliance, I will briefly rehearse the indications to be fulfilled in the adaptation of an artificial velum.

There is needed such a substitute for the soft palate and uvula, as shall be under the control of the muscles acting upon those parts; and this is quite possible, inasmuch as the essential parts of the palato glossus muscles and the palato pharyngei are almost always found remaining, both in cases of congenital fissure, and in those of accidental lesions of the palatine organs.

In the first place, this will allow of the elevation and depression of the artificial substitute, at will, so that the voice can be emitted through the oral or nasal orifice, or both, as may be required; and this is the main desideratum, for it is comparatively easy to provide for the necessities of mastication and deglutition by a simple covering to the orifice sufficiently resisting to withstand the pressure. Secondly, it should furnish such an adaptation as shall be at the same time accurate, impervious to the passage of liquids, or the breath in speech, and yet shall exert no pressure upon the surrounding parts to cause absorption or atrophy of the palatine or nasal organs. Thirdly, there is needed a substance that shall be susceptible of the motions of the soft palate, and shall not so weary the remaining muscles in the performance of their office (while this fixture is "in situ,") as to be impracticable.

These indispensable indications are fulfilled in the artificial velum under consideration, in the last particular by being made of vulcanized soft rubber, so constructed as to be movable upon and over itself, independent of its softness, elasticity, and generally non-irritating character, being thus susceptible of the contraction, expansion, elevation, and depression of the velum, in an extraordinary degree.

The third indication is admirably fulfilled by having a flange perfectly adapted, over the edges of the orifice, both superiorly and inferiorly, through the medium of a plaster of Paris impression of the parts, which is taken with the plaster about the consistency of cream, thus ensuring absolute accuracy.

The nature of the rubber itself, together with its lightness and its necessarily yielding form, (due to the manner of its construction) ensure against any undue pressure.

Finally, its perfect adaptation both to the anterior superior portion of the fissure, as well as to the posterior inferior and lateral parts, by means of the double flange of which mention has before been made, secures the control of the two pairs of muscles above mentioned, and generally of the levator palati also.

With these advantages in his favor, together with the additional one of the fixtures being held firmly in its place by means of gold attachments to the teeth, the patient proceeds to *learn* to talk, by learning the proper uses of the long disused or misused pharyngeal muscles, and the success of patients treated in this manner over those treated in any other is truly remarkable. One point more I will mention: by adopting this means of remedying congenital palatine defects, the operation can be performed much earlier than by the older methods, inasmuch as in the growth of the patient the fissure is enlarged longitudinally, and that enlargement can be easily provided against in the construction of the appliance; and thus by providing for the defect at an early period in life, much better results are obtained than by waiting until misuse has resulted in a permanent tendency to an imperfect pronounciation.

E. A. BOGUE, D.D.S.

Chicago, May, 1864.

OBSTINATE CONSTIPATION.—M. Homolle has found the following powder efficacious in two cases, where obstinate constipation had raised the question of operation for artificial anus:—Powdered strychnine, one-fiftieth of a grain; powdered nuxvomica, one-fifth of a grain; calcined magnesia, six grains; mix. One powder a day at first, then two, and finally three per diem. In both cases the bowels were moved, and the symptoms of suspected internal strangulation disappeared.

SARGENT'S ELIXIR CALISAYÆ FERRATUM.

This combination presents, in a new and permanent form, the important remedies, *Iron, Phosphorus, and Peruvian Bark*, united with aromatics.

Each tablespoonful represents 12 grains of the best Calisaya Bark, and contains in permanent solution $4\frac{1}{2}$ grains of the Pyro-Phosphate of Iron, forming an agreeable aromatic Elixir, entirely free from the repulsive inky taste and color peculiar to ordinary combinations of Iron and Cinchona. The aromatics appear to render it more acceptable to the stomach, and to adapt it better to enfeebled conditions of that organ, while they add to the tonic properties of the Bark.

SOLUTION CHLORIDE OF ZINC.

THE BEST AND CHEAPEST DISINFECTANT EVER KNOWN!

Always useful and perfectly harmless. Invaluable in every sick room.


A luxury in every House.

LIQUOR BISMUTHI.

A permanent Solution, containing 8 grains Ter-Oxide of Bismuth in each fluid ounce. Dose—one teaspoonful. Considered equivalent to an ordinary dose of the insoluble Sub Nitrate.

It is slightly alkaline, and it is miscible with water without precipitation.

Prepared by **E. H. SARGENT**, Manufacturing Pharmacist,
**Corner of Randolph and State Streets,
CHICAGO, ILL.**

 Physicians supplied with all articles of the best quality obtainable.

TOLLE & DEGENHARDT,
MANUFACTURERS OF
SURGICAL & DENTAL
INSTRUMENTS,
TRUSSES, BANDAGES & CUTLERY,
130 CLARK STREET,
P.O. Box 2679. **CHICAGO, ILL.**

Repairing Done at the Shortest Notice.

GEORGE TOLLE,

CHARLES DEGENHARDT.

DR. EDWARD L. HOLMES,
28 NORTH CLARK ST., CHICAGO.

Special attention given to Diseases of the Eye and Ear.
Referred, by permission, to the Editor of this Journal.

CHICAGO MEDICAL COLLEGE.

Medical Department of Lind University.

The regular Annual Lecture Term in this Institution will commence on the second Monday in October, and continue until the first Tuesday in March following. Clinical Lectures *daily* throughout the term.

FACULTY.

- J. S. JEWELL, M.D., Professor of Descriptive Anatomy.
 H. A. JOHNSON, M.D., Professor of Physiology and Histology.
 J. H. HOLLISTER, M.D., Professor of Materia Medica and Therapeutics.
 HENRY WING, M.D., Professor of General Pathology and Public Hygiene.
 F. MAHLA, Ph. D., Professor of Inorganic Chemistry.
 EDMUND ANDREWS, M.D., Professor of Principles and Practice of Surgery, and of Military Surgery.
 RALPH N. ISHAM, M.D., Professor of Surgical Anatomy and Operations of Surgery.
 W. H. BYFORD, M.D., Professor of Obstetrics and Diseases of Women and Children.
 N. S. DAVIS, M.D., Professor of Principles and Practice of Medicine, and of Clinical Medicine.
 F. MAHLA, Ph. D., Professor of Organic Chemistry and Toxicology.
 M. O. HEYDOCK, M.D., Professor of Medical Jurisprudence.
 J. S. JEWELL, M.D., Demonstrator of Anatomy.

FEES.

For the Winter Term, admitting to all the Lectures in the College,	\$50.00
Graduation Fee,	20.00
Matriculation Fee,	5.00
Dissecting Ticket,	5.00
Hospital Ticket,	6.00

The Summer Reading and Clinical Term commences on the second Tuesday in March, and continues until the first Tuesday in July; and is free to all matriculated students of the College. Boarding can be had for \$2.50 to \$3.50 per week. For further information, inquire of

E. ANDREWS, *Sec'y of the Faculty.*

R. R. BALL, GENERAL DRUGGIST, 119 South Clark Street, Chicago, Illinois.

DEALER IN

Pure Drugs, Fine Chemicals, Sugar Coated Pills, Solid Extracts,
 Fluid Extracts, Dietetic Articles, Etc.,

Constantly in Store a Complete Assortment of all Articles of the

VEGETABLE MATERIA MEDICA, Indigenous and Foreign,

Carefully Gathered, *Packed, Ground, Pulverized*, and otherwise prepared for Physicians' use.

WHOLESALE AGENT FOR

W. S. MERRILL & Co.'s ESSENTIAL TINCTURES, FLUID EXTRACTS, RESINOIDS, OTHER ACTIVE PRINCIPLES, AND PHARMACEUTIC PREPARATIONS,

Which will be Sold at Manufacturers' Prices.

Particular attention Physician and Druggists. Send for Circular and Catalogue.

THE STANDARD CHEMICALS,

MADE BY

JAMES R. NICHOLS & Co., of BOSTON.

All highly commended and constantly prescribed by the principal physicians in all the cities. We offer for sale to the Medical Faculty and to the Trade,

**HORSFORD SULPHITE OF LIME,
NICHOLS' ELIXIR OF PERUVIAN BARK,
WITH SOLUTION PROTOXIDE OF IRON,
NICHOLS' PURE COD LIVER OIL.**

THE BARK & IRON

Is deservedly the most popular of Tonics. The Oil, very superior, taking precedence of everything in the market.

Their preparations of Iron are very superior. We have the

CITRATE IRON AND QUININE,
CITRATE IRON AND STRECHNINE,
CITRATE IRON,
FERRI. TART. ET POTASSA,

ELIXIR VOLATILE AMMONIA,
CRYSTALLIZED CIT. MAGNESIA
IODIDE OF LIME,
PROPYLAMIN, &c., &c.

And are prepared to fill Orders given by the Trade.

**LORD & SMITH,
CHICAGO.**

DILLINGHAM'S IMPROVED ISINGLASS PLASTER,

FOR SURGICAL USE.

PUT UP IN 5 YARD ROLLS.

Thin.....	35 Cents per yard.
Medium.....	45 " "
Thick.....	25 " "

For Strength, Cheapness, and Durability this Plaster excels any in the market. It does not irritate the skin in the least, and adheres perfectly.—See *Chicago Medical Examiner*, February No., 1863, page 95.

Upon receipt of the above price by letter, with 15 cents added for postage on five yards, I will mail the five yards of Plaster to any address.

ORDERS RESPECTFULLY SOLICITED.

**Wm. H. DILLINGHAM,
APOTHECARY,**

**Cor. STATE & VAN BUREN STREETS,
CHICAGO, - - - ILLINOIS.**